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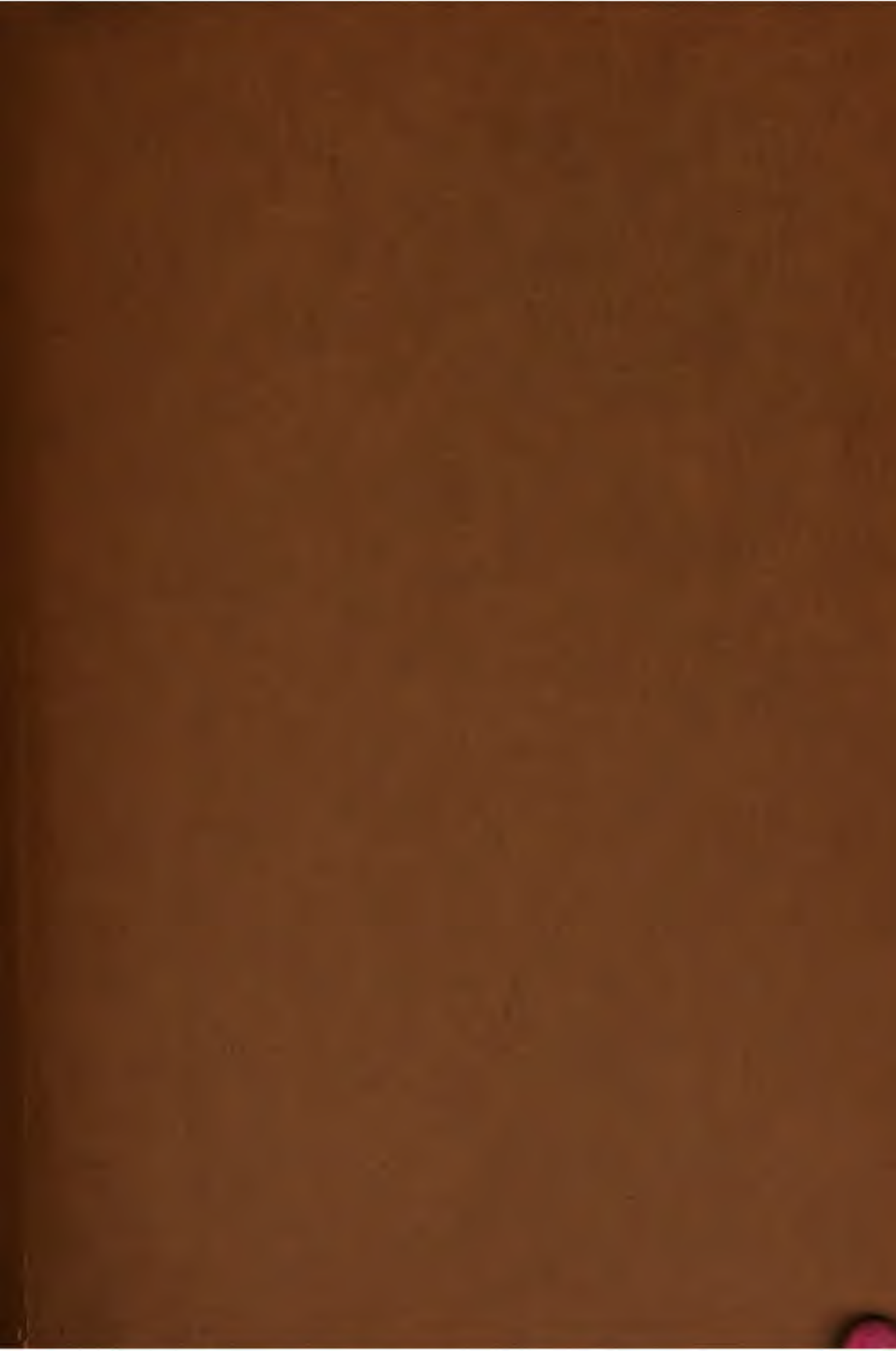
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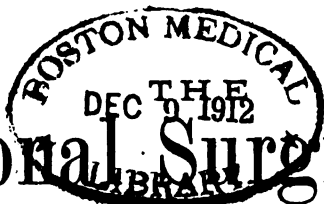
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A WEEKLY JOURNAL.

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ON THE ANCIENT AND MODERN TREATMENT OF WOUNDS.

I.

Within the last few decades, much progress has been made in all branches of surgery. We have advanced in regard to general surgical pathology and the technics of operations, but especially has a most lively interest been manifested in the treatment of wounds. The greatest triumph, however, of the present era of surgery is the successful battle against blood poisoning in its different forms, caused by the introduction of putrid matters into the blood.

The methods adopted in the treatment of wounds have always been the reflex of the views entertained of the physiological process involved in the treatment of such lesions, and the views entertained of the latter as well as the proper method of treatment have been from time to time subjects of animated controversies, and more than ever is such the case at the present day.

To obtain a better understanding of these controversies and of these different theories, it may be of service to present an historical retrospect of the subject.

A great part of the history of the treatment of wounds is a sad history of human folly, and of the most ridiculous fantasies of the human mind.

Ointments and plasters, cold and warm water, ventilation and drainage of wounds, hermetic occlusion from, and free exposure to, the atmospheric air, were means and methods of treatment which in the course of time have been recommended, and one or another of them became fashionable at one time or another.

Many things which we generally look upon as modern,—as discoveries of modern surgery, were taught and practiced centuries ago, and have only been forgotten again; much that was in harmony with the rules of the profession, notwithstanding its inaccuracy, has been transmitted by thoughtless tradition to our times.

The oldest nation of which history tells

us had already accumulated a vast amount of the most singular remedies and dressings, though one would suppose that men, observing the natural process involved in the healing of wounds, might have contented themselves with a more simple formula.

The Sanscrit works mention a large number of dressings gathered after the manner of rough empiricism, which dressings remained in use up to the time of Hippocrates and even later. Most characteristic of the above is a compound of 160 ingredients called Theriak, which was invented by Andromachus, the physician of the emperor Nero. This Theriak was regarded, especially during the middle ages, as a universal antidote to all impediments and sufferings.

Celsus wrote: "*Optimum enim medicamentum quies est*," and Galen said: "The first thing the surgeon has to do, is to see to it that he may not inflict injury, and not interfere with nature in her attempt to heal"; but these were dead letters.

When the teachings of these two authorities were followed, as it was by the members of the schools of medicine during the middle ages, though in the manner of the scholastics of those times, blindly, with little original research and little original thought, the different schools distinguished themselves as to the treatment of wounds mainly in this: that the one advocated those means which had a tendency to promote supuration (poultices), the others those which assisted agglutination (alcoholica), and a third who tried to unite the two principles, and treated all wounds with mild ointments and plasters.

We all know how much superstition and prejudice were prevalent during the middle ages, and especially was this the case among the physicians who were not educated in regular schools. Wounds were treated by all kinds of gestures and exorcism, by oil, wool and leaves, because God had laid his power "*in verbis, herbis et lapidibus*." Old women of both sexes submitted themselves voluntarily to their diseases, saying: "*Dominus mihi dedit, sicut placuit, Dominus a me auferet, quand*

sibi placebit, sit nomen Domini benedictum. Amen."

The surgeons of the middle ages, or rather those persons who practiced surgery at those times, were mostly bath keepers, barbers and empirics. A few only were real surgeons, and even the latter were mostly men with very limited education, who, like mechanics, acquired their knowledge and skill in living as apprentices with a master, and wandered, after apprenticeship was completed, from city to city, and from country to country, sojourning with more or less celebrated masters shorter or longer periods. Before the surgeon could establish himself he was bound to pass a theoretical examination, which was called the master piece. "Such a master piece," says Felix Würtz (16th century), "can be obtained in many places, written or printed; some learn it by heart, as the nun learns her psalms, and pass very well, and are accepted as master surgeons, though they never saw any surgery or had any experience in its practice."

Thus we see that surgery was regarded as a craft, not as a science.

Besides by those who pretended to be strictly surgeons, surgery was also practiced by physicians for internal diseases. The majority of all who practiced the science excelled in one thing, viz: they treated wounds in a terrible manner. Each wound was stitched, and as many stitches applied as possible, because: "a stitch a florin." Paracelsus speaks therefore very indignantly of the greediness of his professional brethren. He was, however, not only opposed to the application of too many stitches but, going too far, he rejected all bloody suture, saying, "the surgeon that heals is nature,—each wound heals by itself if only kept clean; it is true, sewing is an old habit, but fools are old also. You cause pain and fluction and disease by your miserable sewing. Nature desires to heal without pain and is horrified when such torturing fools interfere with their pretended art."

We shall understand Paracelsus better when we learn how many of the surgeons of the times of Paracelsus and Würtz united deep wounds by superficial sutures, but left space between the lips of the wound in order to fill up the latter to its utmost capacity with all the trash of their medicine chest. Würtz said: "they saturate rags of all description with balsam, oil, and ointments, and thrust such saturated rags with violence between the sutures

into the wound." The consequence of such treatment was that the margins of the wound became inflamed and swollen, and that the sutures gave way. Würtz says therefore further: "My dear sir, to what purpose has the sewing been done, but to torture the poor wounded man?"

If the hemorrhage was somewhat considerable, the surgeon commenced his treatment by filling the wound with arsenic, vitriol, sublimate, quick lime, with the good intention of arresting the hemorrhage; each wound was most thoroughly explored by probing as often as the dressing was changed.

The favored remedies were tents, ointments, plasters, balsams, oils and poultices—the whole surrounded by uncleanness; consequently, the development of worms and maggots in the wounds was a daily occurrence.

Paracelsus said: "I saw many times that you surgeons in your foolishness and error were pleased when the wound was only stinking and giving forth foul discharges like an old hole."

Old master Würtz, and this is certainly noteworthy, discards the use of poultices, because they assist to decompose the secretion of the wounds. He says: "Many a wound, if only kept clean and dressed correctly, will heal better than if you apply all your pastes and herbs."

Much of the advice of the excellent old Würtz was not heeded. Even celebrated surgeons of the regular schools opposed him.

Some surgeons of the 16th century assert that they never used the suture; Würtz recommends the latter only for flap wounds, and in the operation of hare-lip. Gradually, more and more specified indications for the application of the bloody suture were fixed. Gelman (1652) used to sew, as a rule, only when there was no laceration of the soft parts and when the soft parts surrounding were not injured; rules which are observed at the present day.

At the time of Würtz, the suture of tendons and nerves was introduced into practice. During the 17th century a Parisian surgeon, Bien-aise, made a specialty of the suture of tendons.

Prima intentio was not expected in uniting wounds by means of sutures—as the general view was adopted that wounds had to heal by suppuration.

Braunschweig (1497) tells us that Lanfranc saw wounds, united by suture and

covered with bandages of albumen, healed on the fourth day. Würtz remarks, "I have, it is true, read that some wounds have healed without suppuration at all, I have never seen it myself, but I will not deny the possibility because I have only been a common barber and not a learned and experienced scholar, therefore I have not seen everything; but I have treated a stab wound which did not suppurate. I have also operated for harelip and cancer, in which cases there was very little suppuration. Such was the case when opposing surfaces were united, so that air had no access."

The general view, at that time, was, that every wound underwent changes through the influence of atmospheric air and had to heal by suppuration. Würtz regards the current of air as injurious to the process of healing and recommends changing the dressings quickly, and closing the room in which the patient is confined, and further, non-removal of the coagula on the fresh wound.

This horror against an open door or window still exists among the ignorant Germans of the present day.

As late as the end of the 18th century, the dogma of the injurious influence of the atmospheric air on wounds was maintained. Würtz thought that the air caused convulsions and pain; Heister, that the blood vessels were constricted, and that union of the soft parts was thus prevented; Le Cat, that the obstructed vessels were excited to suppuration, that callous induration of the margins of the wound was produced, and, finally, that chronic ulceration and absorption of the pus by the blood were the consequences. These vague ideas prevented the simplification of the treatment of wounds and kept in use all the old complicated dressings with ointments and plasters, and balsams and oils.

Even Bell accepted the idea that the most important end of the dressing was, by all means, to protect the wound from the injurious influence of the air. Apart from this, however, he called attention to the importance of drainage of wounds, and recommended the use of drainage tubes.

All surgeons of the times of Paracelsus and Würtz supposed that no wound of any significance could heal otherwise than by suppuration, and their treatment corresponded with this view.

There were three indications considered:

the arrest of hemorrhage, removal of all foreign bodies or substances, and union of the margins of the wound.

With few exceptions all surgeons disapproved of the application of caustics; but they used a styptic powder, composed of flour, bolus, plaster of Paris, alum, burned hare's hair, and ashes of frogs mixed with albumen, and saturated with this mixture a bundle of oakum and applied the whole to the bleeding wound. This was the first dressing, which was generally left in place for three days. If this did not succeed, the *ferrum candens* was made use of. The ligature was known long before Paré's time, but was not considered of practical value. In spite of Paré's recommendation it did not come into general use before the 18th century. Fabricius (17th century) may have occasionally practiced ligation, but he declared that in doing so there was so much blood lost that it could only be applied in the case of vigorous subjects. His favorite method of amputation was with a red hot knife, the amputation ended, he took in each hand a red hot iron and cauterized the several lumina of the vessels so quickly that in great amputations he did not lose more than 2—3 ounces of blood.

Scultatus recommended the ligature.

During the latter part of the 17th century, some surgeons, to arrest hemorrhage, used acupuncture. The gag was also applied to compress arteries of the forearm, and consisted of a metallic ring connected with a plate to which a screw was attached.

As is well known, Petit, in 1718, invented the tourniquet.

The importance of Petit's invention cannot be overestimated, as the development of operative surgery depended on it as the means of controlling hemorrhage; even the ligature was of little practical value before surgeons had learned to compress the main artery.

Surgeons during the 15th, 16th and 17th centuries washed the wounds with water, wine, or the juice of plants, removed also as soon as possible, *i.e.*, before inflammation occurred, all loose fragments of bone as well as all foreign bodies, such as bullets, points of arrows, pieces of armor, etc. Many who looked upon the coagulated blood as a foreign body, avoided, however, its forced removal for fear of renewed hemorrhage.

Some left the blood in the wound that its presence might prevent new hemor-

rhage, exclude the air and aid suppuration.

The union of straight incised wounds was attained by bandaging and proper adjustment of the wounded parts by suture, or by combining both.

The suture was of two varieties, the bloody and the dry. The dry suture consisted in the application of strips of adhesive plaster along both sides of the margins of the wound and union of the former over the wound. This form was almost exclusively employed in wounds of the face, because it produced neither pain nor inflammation and left no cicatrix.

Into gunshot wounds, woman's or goats milk was injected, also pieces of herbs or hot oil were inserted.

The well-known anecdote of Paré's "being short of hot oil," is, if not true, a good invention.

Since the 15th century, a large number of instruments have been invented to remove bullets. The track of the wound was enlarged, and incision or dilation made in order to introduce with more facility instruments for extraction or for the purpose of drainage.

Braunschweig in order to allay pain, administered an opiate before he operated on the wounded. As Albert (*Lehrbuch der Chirurgie*. Wien, 1877) tells us, in Spain, general narcosis was produced by inhalation of vapors as early as 1498. Even some decenaries before this nearly the same mode of producing narcosis is described by Pfolsprundt, and Guy de Chauliac had already preferred this method to the common internal administration of opium.

More and more was the dilation of gunshot wounds abandoned. At the end of the 17th century, the general practice was to change such wounds into incised wounds, and give all the outlet possible to the secretions.

Drainage, introduced already by Hippocrates, and forgotten again, came anew into practice during the 15th century. Originally, drainage tubes were only used to give outlet to secretions of the thoracic and abdominal cavities. During the 15th and 16th centuries, they were used for manifold purposes, their form was improved, they were made with numerous openings at one end and were inserted into all deep wounds. Their use became general. The practice of placing them in the nasal canals in case of fracture of

the nasal bones or other injuries of the nose originated also at that time.

Only illiterate surgeons continued the use of tents; men of education adopted drainage tubes. It is for this reason that Würtz, the surgeon of the 16th century, the promoter of a better treatment of wounds, speaks so much against the use of tents. He described how they not only obstruct the wound, cause retention of pus, give rise to pain and prevent the union of the margins of the wound, but also how they are very dangerous in case of injuries of the large vessels and nerves.

Superstition was less prevalent during the 16th century; Würtz, for instance, did not believe in miraculous remedies. It abounded again during the 17th century, even to such a degree that sympathetic remedies assumed the first rank in the treatment of wounds. Ignorance was in those days as well as to-day the main support of secret and miraculous cures. Hardly any one surgeon resisted the mystic views of the epoch; but thanks to the sympathetic treatment—then in vogue—there came a beneficial reaction. Incised wounds were no longer treated by suppuratives, tents were more and more discarded, the vague idea of the injurious influence of atmospheric air assumed a more definite form, and the views of Jüngken and Muralt were systematically taught by Belloste. This systematic teaching accorded with the views of modern surgery.

"Above all," says Belloste, "must the air be excluded from the wound, as by the low temperature and the acid of the former the blood in the capillaries of the latter will coagulate and bring on arrest of circulation, and inflammation. We know further that the spread of contagious diseases is caused through the agency of infectious germs in the air; that these constituents of the air retain their power for a long time in the rooms of the hospitals and produce occasionally new infections. Now if these atoms adhere to the walls of the rooms of the hospitals, they will the more readily do so to the sensitive and moist surfaces of wounds. Indeed wounds treated in army hospitals assume thus a bad condition." "We must discard tents," he says further, "and avail ourselves of those means which restrain suppuration and prevent putrefaction; such a means, now, is alcohol. It is certain that the epidermis excludes certain injurious constituents of the air;" to give the wound a substitute for

the protecting skin he covers it with a cloth saturated with alcohol. The aim of his method is : little suppuration, careful, hasty and infrequent dressing.

At the close of the 17th century alcohol as a dressing for wounds was in general use.

We find that the treatment of wounds was thought of great importance during the first half of the last century, especially in France. The Academy of Surgery in Paris gave (1731) prize essays on this subject. Very valuable papers, for which prizes were awarded, were published, and their influence on the development of surgery was noticeable not only in France, but also in Germany, whence surgeons used to come to Paris to receive their education.

While Richter in Germany simplified the treatment of wounds, the same was done in England by Hunter, who described the healing of the wound beneath the scab. It is true it was the anatomist and surgeon Fallopius, who lived during the 16th century, who observed this mode of healing of ulcers by nature, without any artificial interference ; it seems, however, that his observation was not thought noteworthy.

Hunter says, that the healing of a wound beneath a scab is to be regarded as the first and the most natural mode, because the aid of art is not required for that ; that this circumstance was as yet too little thought of ; that in many cases of wounds one should allow the development of a scab instead of preventing it, believing that art could do better than nature ; and proposing therefore to change all wounds into ulcers.

In Great Britain, surgery had assumed during the 18th century in many respects a more independent position ; had emancipated itself from many prejudices and superstitions, against which enlightened minds in Germany and France had still to contend.

One of the great lights in England at that time was Cooper.

It was only during the first part of the 19th century that, in the treatment of wounds, the German surgeons emancipated themselves more thoroughly from the old technics of dressing.

Von Kern in Vienna (1818) treated wounds, especially such as were the results of amputations, without closing, without bandaging, and without sutures. The only manipulation which was performed during

the first 9—10 hours consisted in the application of cold fomentations to the open surface of the wound, and after the wound had covered itself with plastic lymph as with a glue, he united the margins of the stump with the greatest care, applying only a few strips of adhesive plaster. This treatment was continued until the stump had completely healed ; if suppuration set in, warm fomentations were substituted for the cold ones.

Von Kern explains his simplified treatment as follows :

" The dressings for amputation wounds in general use are not commendable as means of promoting the healing of the latter ; they are even disadvantageous and injurious and must be disapproved for the following reasons : In the first place, because they keep the stump too warm and consequently aid traumatic inflammation and suppuration ; secondly they act as mechanical and chemical irritants to the surface of the wound and produce thereby inflammation and secondary parenchymatous hemorrhages by which primary intention becomes illusory ; finally because the pressure, which the soft parts suffer by compression with adhesive plaster, favors retraction, and the stump assumes a bad shape."

Von Kern says further that the direct influence of atmospheric air on the surface of the wound is not only not injurious, but favorable, as his experience shows. Indeed the most happy results were reported from his clinic.

With the same simplicity with which he treated amputation wounds did von Kern treat gunshot wounds during the Napoleonic wars. He says that with the exception of lukewarm water—the only application allowed to suppurating wounds—there is no ointment, no balsam to be used, as nature supplies such herself, the wound producing it without our interference. His words are : " Let us leave all ointments and balsams aside. Let us forget for one moment all decoctions of Calisaya bark, and all expensive remedies which have been in general use till now. Let us discontinue the use of lint and all bandages made of it. They are foreign bodies,—they can only irritate. Let us discard the evil habit of filling wounds with lint, because such action prevents the discharge of the secretions and favors putrefaction of the wound. Let us give up the use of artificial dressings. Let us avoid all those balsamic fluids which were

injected into the tracks of gunshot wounds. Let us no longer exert pressure with our hands in the direction of these tracks for the purpose of forcing out the pus; we shall only irritate the injured parts and insure a permanent state of inflammation. Let us no longer incise gangrenous wounds. Let us no longer use spirits of camphor or Calisaya powder to heal gangrene. All we have to do is to support nature by internal tonics, that the sloughing portions may separate themselves from the vital."

The most noteworthy publications of the latter part of the 18th and the commencement of the 19th centuries are marked by acute objective observation, severe criticism, and the commencement of scientific statistics. This period is characterized as one of progress, though the principles which were promulgated by Hunter in England, Richter in Germany, and Dupuytren in France were not at once listened to and appreciated by the majority of surgeons. Until not long since, one could say with Ph. von Walther: "Wounds, abscesses, ulcers and fistulae will heal if only two-thirds of that shall be left undone which certain still existing rules of surgery prescribe. Omitting these two-thirds we can heal quicker, with more certainty, and for the patients in a less painful manner than in carrying out those rules. But many surgeons might regard it as something monstrous, something against the demands of the profession to leave certain wounds without dressing and without suture."

We find at the end of the 18th century, as well as to-day, and as well as at any period of progress, much opposition. New views on one side, old traditions on the other. There are always surgeons who think for themselves, like Würtz and Paracelsus, and others who are led by authorities.

As we have seen, at the end of the 18th century it was established that the influence of atmospheric air on suppurating wounds gave better results than the application of dressings formerly in use. It was further established that besides the primary union there was another union without suppuration, by scabbing, possible, and the discovery of these facts became important to the further development of surgery.

It was further established that the primary union is the most preferable, as suppuration and sometimes even inflammation

are absent; that next to it in value is union by scabbing, as here the inflammation will never be so severe as in case of union by suppuration. The third union by suppuration is inferior to the first and second.

Von Kern und von Walther proved that the third union (by suppuration) takes place more readily under free access of air than by occlusive bandaging. The followers of Hunter believed that there was no suppuration beneath the scab because the air was excluded. Hunter himself, however, did not announce this view. Ph. v. Walther does not think that suppuration is caused exclusively by access of air to wounds, and calls attention to the fact that it occurs in absolutely enclosed abscesses; but he has no doubt that the access of air aids suppuration.

Since his time up to the present day this view has become more and more general; at one time, however, some surgeons thought that by excluding air completely they would assist the formation of the scab. Hopes were entertained thus to arrest suppuration where it had already commenced. A large number of suggestions were offered with this end in view, viz: to exclude all air from wounds, to make them air-tight. All these useless theories have been forgotten now. Since the treatment by occlusion proved a failure, attention was again directed to the teachings of v. Kern and v. Walther, and wounds in which it was not expected to secure union by primary intention, were left, if possible, without bandage. The question was raised, what can be the use of bandages for wounds, which, as experience proves, do not exclude air sufficiently, and do not prevent suppuration. Thus the absurdity of confining foul pus was plainly recognized.

Thus the nice and artful many-tailed bandages and compresses were given up, and in hospitals where formerly some hundred weights of lint had been used yearly, there were only a few pounds required now.

A step further was taken. All dressing of wounds was abandoned, and the open wound treatment became a method. The beneficial influence of a fresh draft of air on a suppurating surface and especially the antiseptic action of the air on the secretions of the latter was demonstrated, and statistics spoke very much in favor of the open wound treatment.

(To be continued.)

SURGICAL TREATMENT OF GANGRENE OF LUNG.

By DR. A. ROSE, TARRYTOWN, N. Y.

John Kennedy, of Tarrytown, 34 years of age, had been suffering from intermittent fever during two months of the year 1875 and three months of the year 1878; otherwise had been healthy and strong. Nov. 14, 1879, was taken sick with croupous pneumonia of the right side, with expectoration of brown sputa.

I first saw the patient Dec. 17, 1879, after he had been confined to bed for five weeks, and diagnosed circumscribed gangrene of lung on the right side and pyo-pneumo-thorax.

Expectoration consisted of dirty, greenish-gray, and very offensive sputa; there was complete dullness on percussion on the right side from the fifth rib downward in the erect position, in the recumbent, from the seventh rib downward.

There was moderate fever and also gastric symptoms: coated tongue, loss of appetite, with great swelling of abdomen; dispoë was also present.

Ordered: A two grain pill of tar every two hours, and inhalations of turpentine vapor.

The gastric symptoms as well as his general condition improved very much; but patient suffered most of the time, especially at night, from painful cough and complained constantly of a severe circumscribed pain to the right of the right mamma.

January 28th, 1880, an emphysematous swelling of the size of the fist made its appearance at the point just mentioned. I thrust in the needle of a hypodermic syringe and drew off a few drops of offensive matter; then with a bistoury made an incision into the emphysematous mass and gave exit to a small amount of matter, but a considerable amount of gas.

This operation was followed by most marked relief to the patient.

To establish a thorough ventilation of the gangrenous lung, or rather of the cavity existing in it, to secure a quick removal of the pus accumulated there, and to treat the diseased surface directly, I made the patient inhale condensed air, saturated with turpentine, by means of Fränkel's apparatus.

The result surpassed my most sanguine expectations. At first as much as several teaspoonfuls of pus and debris were dis-

charged daily; but as early as the second day the offensive odor had disappeared, and at the expiration of a week all discharge had ceased, and he was no longer troubled with cough.

Since February 8th, 1880, patient sleeps the whole night through without coughing at all. February 9th, goes out of doors and feels no sense of discomfort.

Between the inferior angle of the right scapula and the spine, coarse rales and metallic tinkling can be heard, indicating that a cavity still exists.

I present a cut of Fränkel's apparatus.



I have described the same already (A. Rose, On the Treatment of Diseases of Respiration and Circulation by the Pneumatic Method. Medical Record, 1875, pp. 577, ff.) Though it served me admirably in this case, I would not recommend its general adoption in the treatment of lung and heart diseases, Waldenburg's apparatus being far superior in every respect.

RUPTURE OF PERICARDIUM.

By DR. A. ROSE, OF TARRYTOWN, N. Y.

Patrick H., of Tarrytown, 28 years of age, had always enjoyed good health. November 29th, 1876, was working in the gas house when an explosion occurred. Was thrown into the second story, the ceiling of the room in which he was at work being blown out, and landed on his stomach with the whole force of the weight of his body. Did not lose consciousness, but got up and made several attempts to run through the surrounding flames, and finally succeeded in reaching

a window through which he escaped to the street and walked home. His face, neck and hands were badly burned, and for some time he lay unattended in the yard, the family being occupied with his father who was fatally injured by the same explosion. He was confined to his bed 11 months.

Patient is of medium size, well nourished and of healthy appearance. Appetite good. Inclined to constipation. Sleeps very little, sometimes not at all for nights in succession. Most of the time complains of pain in the region of the heart, and bending forward excites pain. Has to sit leaning back in the chair. When in bed, is obliged to lie on his back or on his right side; if he happens to turn on the left side, the violent beating of his heart awakes him. There is a prominence visible in the cardiac region, which becomes enlarged to the size of a fist about three times in 24 hours, sometimes by day, sometimes during the night. About twice a week this phenomenon is preceded by hemorrhage from the lungs to the amount of from one to ten ounces. As soon as the prominence begins to enlarge patient suffers from great anxiety of mind, fears that he will drop down dead, and walks up and down the room; then he experiences a sensation of great weakness, dizziness, with disturbance of vision, rush of blood to the face, and sometimes faints. When the weak or fainting spell is over, water exudes from the integument covering the swelling, the amount being considerable, about 10 or 12 ounces; after this the left side of the body feels all cold and numb. The heart's action at this stage is very feeble, and the patient takes a walk out doors to excite the blood to a more vigorous circulation. Once in a great while it happens that he becomes pulseless and speechless during such an attack, and has to be rubbed. During these periods of speechlessness his mind is occupied by various phantasies, and when consciousness is returning he tells romantic though somewhat coherent stories of where he has just been, always terminating with an account of his father's grave. The weak or fainting spells last sometimes as long as two hours. The heart impulse is feeble but normal as to position; sounds are regular, but dull. The most careful percussion causes so much pain that it has to be desisted from.

I. OLDECOP. 250 Cases of Cancer of the Mamma treated in the Clinic of Professor Esmarch in Kiel, during the years from 1880—1878. (Archiv f. Klin. Chir. Bd. XXIV., H. 3, p. 536 & H. 4, p. 691. Centralbl. f. Chir. 1880, 10.)

The chief results given in this paper, which is as interesting as it is elaborate, are briefly as follows:

Of the 250 cases of cancer of the mammary gland there were:

I. Cases not operated upon,.....	21
II. Operated upon,.....	229
Of these latter	
1. Died in consequence of operation,.....	23
2. Were still living, affected with evident relapse, or died in consequence of relapse,.....	109
3. The later history not known,.....	54
4. Living free from relapse, or died in consequence of inter-current disease without having had any relapse of cancer,.....	43

250

In the majority of these cases the disease had made its appearance during the period between the 46th and the 50th years. The average date of the first appearance of carcinoma according to this table is the 48.4 years.

208 of the patients were married, 30 were single. Of the 103 patients who had given birth to children, 36 had suffered from puerperal Mastitis. In nine cases the cancer had originated in a lump, which was the result of, and had remained after, Mastitis. As to the connection existing between the disease and injuries received, the histories of the patients were unreliable.

The seat of the carcinoma was in 123 cases the right, in 102 the left mamma. The predilected spot was the upper and external half of the gland. Eleven cases could be pronounced hereditary. In 60 cases inheritance could be positively excluded.

Thirty-one who presented no affection of the lymphatic glands, lived on an average 45.1 months after the operation; for six months, on an average, they were exempt from any return of the disease.

Fifty-seven patients in whom the lymphatic glands were affected, lived an average of 34.8 months after the operation. Average of time free from return, 2.5 months.

The duration of life from the commencement of the disease in cases not operated on averaged, 26.5; in cases operated on, 38.1 months.

287 operations were performed on 225 patients, of which 23 died.—Of 184 patients operated on before the introduction of Lister's method, 16 died—this number representing a mortality of 8.7 per cent. Of 77 patients operated on and treated according to Lister's method, seven died (mortality 9.1 per cent).

The time of recovery averaged formerly 5.2 weeks; since the introduction of Lister's method only 4.5 weeks.

Of the 23 cases resulting fatally, twelve died in consequence of accidental wound disease, four of collapse, and secondary hemorrhage, and one of Pneumonia. In six cases the cause of death was not fully explained. Erysipelas followed the operation in 15 cases (+ 5).

In 46.4 per cent of the cases the disease reappeared within the first three months after the operation. From this time the proportion of the cases in which it reappeared becomes less and less; and only 18 cases or 16.0 %, were recorded in which the disease had returned after the elapse of one year after the operation. The return of the disease after three years was observed, in only one case, though no exact history could be secured; therefore the end of the third year is to be regarded as the limit of relapse. The table of Oldecop thus shows 23 cases in which carcinoma of the mamma had undoubtedly been cured. In those cases in which the mamma, together with the axillary glands was removed, the disease reappeared for the most part in the mamma; when the operation was confined to the mamma alone, the cancer reappeared in the axilla.

Finally, the author gives brief extracts from the histories of the 250 patients.

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TO OUR READERS.

The design of this journal is new, both because it is devoted to surgery exclusively, and because it begins a new departure by publishing complete translations from foreign medical literature.

Both these features cannot fail to meet a real want.

There exist many journals of Medicine and Surgery combined, but much information is lost to the profession on account of the absence of an organ devoted to surgery alone.

It cannot be denied that it is difficult for so many journals to always procure valuable and interesting original communications, while we, in selecting the best that has been written in many languages and presenting it, not only in the form of brief extracts, but in complete and faithful translations, shall give a new and fresh impetus to study. We shall also not lack interesting original matter, as we are confident our translations will induce American writers to communicate through our columns their own views and experiences, comparing them with the views and the experiences of foreign authors.

We trust that even American surgeons who can read our translations in their original will welcome our paper; it will be to them a source of special gratification to see the treasures to which they alone had access, given to the entire American medical profession.

Such at least was the feeling, here as well as on the other side of the Atlantic, when the works of Niemeyer, Billroth, Ziemssen, Hamilton, Sims, Sayre, Thomas, and many other distinguished authors appeared in translations.

Aside from these considerations, there is a practical point connected with such translations. We have observed during the last decade that the international exchange of the best literary productions has been fruitful in various ways; a better understanding on many important questions has been reached; new life and new energy have manifested themselves here and there; friendship has been fostered, and mutual esteem has been excited

among the professional brethren of different nationalities.

With this our new journalistic departure we earnestly desire to promote the interests of our science, and we sincerely hope to merit the approval and support of the professional brethren in this our aim.

SAYRE'S PLASTER OF PARIS JACKET IN
THE TREATMENT OF FRACTURES
OF THE SPINE.

BY PROFESSOR KOENIG, OF GOETTINGEN.

(Centralblatt für Chirurgie, 1880, 7.)

Among the many cases of Pott's Kyphosis, treated during late years in the clinic of Goettingen by means of Sayre's Plaster of Paris jacket, there were a number of patients who had been suffering longer or shorter periods from paralysis of the lower extremities.

I must confess that at first I was somewhat afraid of using suspension and employing the tight fitting bandage in cases which presented such complications; but as neither during the suspension nor later any threatening accidents happened, I consequently applied the bandage to such patients without hesitation. Some of the cases thus treated showed rapid improvement, respecting the speedy disappearance of the paralytic symptoms.

After this experience I concluded to make use of the Plaster of Paris jacket in cases of recent fractures of the spine, and I desire now to report the results obtained in cases of this kind.

1. August Siebert, of Grone, 20 years of age, mason, fell, August 14th, 1879, from the second story; he was at first unconscious and had to be carried to the hospital.

The patient, a young man of strong constitution, was, upon arrival in the hospital, still in a condition of semi-consciousness. Examination revealed fracture of the eighth dorsal vertebra, characterized by considerable angular prominence of the spinous process, and severe pain at the point of injury.

Though the patient was unable to walk or stand, there were no distinct symptoms of paralysis of sensation or of motion present; neither were there any symptoms of paralysis of the bladder or rectum perceptible.

August 16th, Siebert having been suspended, the Plaster of Paris bandage was applied. I did not raise this patient as high up as I was accustomed to do with children afflicted with Pott's disease; neither was it necessary in this case, as

the gibbus disappeared as soon as the patient stood upright on his toes. The bandage reached down as far as the trochanters, and up over the shoulders, and the application as well as the wearing of the same was surprisingly well tolerated. I intended to keep the patient in a horizontal position during four weeks, but he frustrated my plan by secretly getting up and walking about, already during the third week. This disobedience, however, was not followed by any ill consequences, and when in Mid-September the bandage was removed, the gibbus had disappeared and never again reappeared; at no time had there been observed any morbid symptoms from the spinal cord.

2. Wilhelm Nietmann, 28 years of age, mason, fell, October 21st, 1879, from a height of 40 feet, striking on his feet. He remained lying unconscious for about half an hour, and was then taken to the hospital. He was still much collapsed, but was able—though to a slight degree only—to move his extremities, and complained of very severe pain in the back. The lower extremities were, as he expressed himself, numb, as if they were asleep; violent formication set in, and the sensation was reduced; there were at no time, however, essential disturbances of either micturition or defecation.

On examination, great tenderness of the first lumbar vertebra was noticed. There was too *an angular prominence of its spinous process plainly visible.*

October 22nd, a Plaster of Paris bandage was applied in the same manner as in the above mentioned case, the bandage overlapping the trochanters. The nervous symptoms disappeared in a few days, and since November 22nd, patient has walked about. The bandage was removed November 29th. The kyphus had disappeared, and the patient, though still weak, could walk well. He completely recovered.

3. H. Maerz, 38 years of age, brakeman, fell, November 28th, 1879, from the roof of a railroad car, his back striking upon the hard frozen ground. On being supported by two assistants he was able to walk, but was soon attacked by severe dispnœ. Being admitted to hospital, fracture of the eighth, ninth, and tenth left ribs near their vertebral extremity and hæmo-pneumo-thorax of the left side were diagnosticated. After a few days, when the symptoms of these injuries had somewhat disappeared, pains in the spine which had been perceptible from the be-

ginning, now predominated. Though a gibbus of moderate extent, corresponding with the ninth and tenth ribs and also with the seat of the pain, had also at once been noticed, the grave respiratory symptoms forbade, for the moment, a correction of this deviation. On December 3rd, the patient, a very strongly built man, complained of an exceedingly violent *Crural-Neuralgia*, which increased from hour to hour, and was soon accompanied by intolerable pains in his left foot. December 5th, Maerz was unable any longer to raise the affected extremity. The thoracic symptoms meanwhile having markedly diminished, the Plaster of Paris jacket was applied in the same manner as in the above described cases; the following day the nervous symptoms ceased and did not reappear. The condition of the patient from this time remained good; without trouble and without pain he could sit up and walk about, and only by earnest persuasion could he be induced to keep in bed, and in a recumbent position. He was restored completely.

I have briefly given these three histories, and have but little to add to them.

All three patients presented *recent fractures*. In the first case enumerated, there were no symptoms from the spinal cord present, while the latter two showed slight paralytic symptoms, especially the third case, in which they increased in violence. In all three cases a decidedly beneficial result was obtained by the use of the bandage: the fractures united speedily, without marked deformity and without symptoms from the spinal cord.

For cases of this kind, or similar ones, I can highly recommend the Plaster of Paris jacket, as the latter, in preventing deformity and paralysis, accomplishes certainly more than we had expected, and more than we were able to secure by any other method known heretofore.

It stands to reason that in severe cases of fracture with laceration of the spinal cord and complete paralysis of the lower extremities, the bandage cannot be of service, especially if the injury is not a recent one, when perhaps decubitus already exists. But the diagnosis of the extent of the injury to the spinal cord is not seldom an exceedingly difficult one, and thus a cautious application of the Plaster of Paris jacket may commend itself in such recent cases, and in cases not too old, accompanied by paralysis, in which the general condition of the patient does not present a contra-indication.

As to the technics of the method, I have only one remark to add: It is comparatively easy to take children from the suspension apparatus and to place them in a recumbent position, but it is difficult to do this with heavy adults; in such cases it is advisable to use a long and strong board with a foot-piece fastened to it at a right or obtuse angle. The board is placed behind the patient and the foot-piece pushed beneath his feet while he is still kept suspended. Afterwards, while the pulleys gradually descend, the board and the patient are made to incline in such a way that finally the former, with the patient upon it, rest on the floor. The idea of this simple apparatus was—so far as I know—first conceived by the late Dr. Sachse (Cairo); at least he first suggested its use to me.

Most likely there have already been similar experiments made with Sayre's bandage in hospitals where there are a larger number of injuries treated than in the clinic of Goettingen, and these lines may serve to cause the publication of analogous or contradictory experience.

(Dr. Sayre whom we asked about his experience in treating fractures of the spine by means of his apparatus, writes: "I have already treated four cases of fracture of the spine by suspension and Plaster Jacket with the happiest results. But they were all old cases, two of them three years and eight months, fractures by a railroad accident, and both partially paralyzed in lower extremities *all* that time. Both are now walking without crutches or sticks. One of them, his own case, Dr. Hacket has published in *Boston Med. and Surg. Journal*, Feb. 12th, 1880. I infer from Professor Koenig's remarks that he sometimes suspends his patients completely from the floor—this is all *wrong*—and may be *dangerous*. I only suspend them very closely to the position in which the patient feels *comfortable* and never *beyond* that point—even if his heels are not lifted from the floor. But never suspend them *clear of the floor*." Editor.)

B. RIEDEL. What becomes of Blood and of Different and Indifferent Foreign Bodies in General, in the Joints. (*Deutsche Zeitschrift für Chirurgie*, Bd. XII, Hft. 4 und 5. *Centralblatt für Chirurgie* 1880. 10.)

Fresh blood which had been injected into the kneejoint of rabbits became, after a half hour, partly coagulated, and remained partly in its liquid state. After 1½ to 15 hours, the liquid portion had disappeared from the joint; the third part of the blood injected adhered, in a coagulated condition, to the wall, and was already on the third

day lined with the endothelium of the sac, and traversed by cellular bands.

Those coagula found loose in the articular cavity were also coated with layers of cellular tissue.

On the tenth to fifteenth days all coagula had disappeared; for several weeks following there was only pigment noticed on the wall of the sac. Indifferent and well disinfected bodies (slate-chips, sand, well chopped gauze) introduced into the cavity produced at first swelling of the joint, and became also coated with endothelium.

Particles of iron, however, did not become encysted, and organic substances, (well pounded muscular fibres) were absorbed like blood. Completely boiled globules of quicksilver caused suppuration in the joint followed by abscesses spreading into the soft parts.

Injection of Liquor Ammonii brought on a condition similar to Arthritis deformans.

ON PUNCTURE OF HAEMARTHROS.

BY PROFESSOR RICHARD VOLKMANN.

(*Centralbl. f. Chirurgie* 1880, 10.)

B. Riedel in his excellent paper, from which the above is a brief extract, has published the results obtained by experimenting on animals to ascertain what becomes of different and indifferent substances and bodies introduced into articular cavities. He studied among others the fate of blood which had been injected into the synovial sac.

In cases of Haemarthros, does the blood coagulate or not? When and under what conditions does it become absorbed? These are questions of eminently practical importance.

Dr. Riedel in his paper invites the publication of further experience. Responding to this invitation I wish to state that in quite a large number of cases traumatic Haemarthros in which the trocar was thrust into the joint, within the first three days, I found the blood all or nearly all in a fluid condition; I also found dark liquid blood without any trace of coagulation, in one case 50 ccm. of this fluid, after puncture on the sixth day, and respectively 50, 80 and 100 ccm. in three cases, punctured eight days after the injury. In another large number of cases between the fourth and eighth days, the principal mass of the blood had not yet coagulated, though some coagula came through the canula and others evidently remained in the sac. In one case, however, of a five-days-old transverse fracture of the patella, with broad diastasis of the fragments and tensely filled synovial sac, the blood had already completely coagulated; even by powerful aspiration I did not succeed in drawing off one drop of liquid blood, but only some comparatively solid coagula.

Riedel is inclined to believe that even larger coagula in the joints might be

quickly absorbed. In my work "*Beiträge zur Chirurgie*" he might have found one case at least which proves that it may sometimes happen that absorption goes on very slowly:

A man between 40 and 50 years of age had sustained a severe compound and comminuted fracture of the tibia, complicated by a profuse hemorrhage and violent contusion of the knee. Fourteen weeks after the injury I amputated the thigh, and found the synovial sac of the knee-joint still filled with large masses of coagula. In the work quoted, these masses are described as being of a pulpy consistency, but I ought to add that they adhered very firmly to the whole extent of the inner surface of the capsular ligament, and that in the joint there was not found one drop of synovial fluid.

As to the history of the operation in question, I wish to mention that I recommended puncture of Haemarthros as early as 1861 (*Langenbeck's Archiv*, Bd. I) in such cases of intra-articular fractures or fractures extending into the joint, in which the extent of the exudation prevented the complete adaption of the fragments. In the year 1873, I thus treated successfully a case of transverse fracture of the patella, which case I described in my work "*Beiträge zur Chirurgie*" pp. 84 and 85. On the second day after the injury, I removed from the articular cavity of the knee, by means of the aspirator, 90 grammes of synovia mixed with blood; then the fragments were brought together by means of adhesive plaster, and a Plaster of Paris bandage was applied. Within eight weeks osseous union, or at least fibrous union of such firmness that no mobility of the fragments could be perceived, had occurred. Schede's recommendation of this very method dates only from the year 1877.

Puncture of the knee joint in cases of traumatic Haemarthros has been, however, systematically performed by me only since the introduction of the antiseptic treatment.

But besides the case of transverse fracture of the patella already mentioned, there are three more cases described—in my yearly report of 1873—in which confusion with Haemarthros of the knee joint was treated by means of puncture, (l. c. p. 101, observation 3, and p. 136). In the work quoted I have also observed that I had sometimes noticed that large traumatic effusions of blood into the knee joint, which had been left to themselves,

often became absorbed very slowly, and that they had been followed later by permanent Hydrarthros, relaxation of the ligaments, etc.

At present I am prepared to add that—according to recent experience—it is quite certain that ankylosis with complete obliteration of the joint may develop in consequence of rapid organization of the effused and coagulated blood. It seems, however, that this is of rare occurrence, and that most likely it happens only when there is an equally distributed layer of cruor deposited on the inner surface of the synovialis, such deposit suppressing early and completely the secretion of synovia. A case of this kind I had the opportunity to examine post mortem. It was a transverse fracture of the patella caused by direct force (a fall against the edge of a stone step) without dislocation, where partial osseous union had taken place. The cartilages were completely preserved, but had become blended to each other and to the synovialis by a continuous layer of very tense connective tissue, 1 to 2 lines in thickness, in such a manner that not even the slightest motion could be executed. The intermediate connective tissue was almost entirely of a reddish-brown color, and masses of granular blood-pigment were imbedded in this tissue as well as in the synovialis.

OSTEOTOMIA SUBTROCHANTERICA AND CHISEL-RESECTION OF THE HIP-JOINT.

By RICHARD VOLKMANN.

(*Centralbl. f. Chir.* 1880, 5.)

Osteotomia subtrochanterica for Ankylosis of Hip-Joint, which operation I first recommended in 1874, (*Centralbl. f. Chir.* 1879, April) and which I described more extensively in my "*Beiträge zur Chirurgie*," is already, as I believe, firmly established in modern surgery. Up to the present time, I have performed this operation twelve times. In no case has it been followed by any complications, and each time the orthopedic aim has been fully attained.

Though osteotomia subtrochanterica relieves the deformity, there is one drawback attending this operation, viz: it does not remove the ankylosis of the joint. Stiffness of the joint remains as a more or less inconvenient sequel, according to the patient's occupation or his mode of living, and, generally speaking, this fault will be the more noticeable the

more perfect the orthopedic result. The patient finds great difficulty in sitting down. If a moderate degree of flexion be maintained, sitting is made possible with less difficulty—patient has to use eventually a higher chair—but his shape remains bad. While walking and standing, the patient's back—at the lumbar region—will be flexed inward (lordosis), the nates will project in an unseemly manner, and the shortening of the extremity will not be completely compensated for. If the limb remains fully extended during treatment; he is altogether unable to sit. A young clerk, whose occupation obliged him to sit a great deal and to do much traveling, was suffering from very severe contraction of the hip-joint with bony ankylosis. He would have been willing to submit to operation, because the latter would certainly have liberated him from his crutches, but he was obliged to refuse, fearing that instead of having to walk on crutches he would have been made somewhat uncomfortable when occupied at his writing desk and riding in his coupé; at that time, not knowing better, I had to confess that he was right.

As later experience has taught me, we may in certain cases very advantageously substitute resection of the hip joint by means of chiseling for osteotomia subtrochanterica, and thus remove at once the deformity and secure an active and sufficiently movable joint. These cases, however, have to be selected very carefully because every bony ankylosis of the hip joint is by no means a proper subject for this method of treatment. We shall speak of this hereafter. So far I have performed chisel resection of the hip joint on six patients. They all recovered, and the result with regard to the re-establishment of function was very satisfactory in each case.

Chisel resection of hip joint is performed in the following manner: A longitudinal incision is made along the posterior and external side of the joint—the same as in von Langenbeck's method of hip resection. Then the femur is separated about an inch (in adults), below the apex of the trochanter, the inner wall of the neck of the femur, after having been chiseled into to a certain extent, being broken through. The upper end of the lower fragment being made more accessible by a vigorous movement of adduction, is in most cases still too broad to adapt itself well to the newly formed acetabu-

lum, because the cut is made partly through the neck of the femur. By means of the chisel and bone cutter, there must be removed enough bony substance from the inner side to make the cut surface of the diameter of a transverse section of the femur at about its middle; the cut surface must at the same time be well rounded. In performing this action it is better to remove too much than too little bony substance. Sufficient experience warrants me in saying that, provided the after-treatment is well conducted, there will be no fear of a too movable joint resulting. During the last six years I have resected about 130 hip joints. All the patients who recovered at all, walk without support of any kind.

Having cut through the femur, a new large, and deep-as-possible acetabulum has to be formed by removal of the head of the femur. This removal is accomplished piece by piece, with a gouge. The operation is very difficult and tedious; especially where sclerosis is present, the chisel cutting only with difficulty. It happens sometimes that, while operating in the depth somewhere, an opening in the pelvis is made; this, however, if the proper precautions are taken, is not a serious accident; we have simply to give the chisel another direction. It is very satisfactory, when instead of a bony, a cartilaginous, or only a fibrous ankylosis is met with; in such cases the line between the head of femur and acetabulum is plainly perceptible. To secure a good result, that is, a movable joint, it is indispensable that the upper end of the femur should find not only room enough in the new acetabulum, but also that it nowhere meets with any pressure; that on the contrary there be ample space left between femur and acetabulum. In most cases, it is true, such freedom of motion cannot be established at once; it may, however, be effected in the course of the next six or eight days by means of powerful extension by weights.

The operation appears very formidable, but it is tolerated very well. With sufficient skill in applying the antiseptic bandages, *prima intentio* is always secured because only freshly wounded, (never ulcerating or granulating), tissues are to be treated.

An intimate knowledge of, and sufficient experience in, after-treatment are indispensable; the latter consists exclusively in the energetic application of extension by weights—while after the osteotomia subtrochanterica immovable bandages

may be used at a comparatively early period. Resection being made above the trochanter minor, it is in most cases impossible at once completely to overcome deformity, especially in old, extensive contractions with flexion. During the first period after the operation the tissues surrounding the wound, have—by plastic infiltration and by increased imbibition of nutritive fluid—become softer and more yielding. To secure the desired orthopedic result, and to establish the necessary separation of the new joint surfaces it is precisely at this period that the extension has to be made with a rapidly increased weight, beginning with from 15 to 30 lbs, the movements of the patient being meanwhile carefully controlled.

In every other respect the treatment is the same as after all resections of the hip joint: At an early period the patient will be allowed temporarily to raise himself in bed. Very early systematic passive motions must also be made. A rope with a handle is attached to the foot of the bed, the patient, taking a hold of the handle, alternately raises himself into a sitting posture and then lowers himself again. To prevent partial relapses of the old contraction, it is necessary that the extension by weight be continued during the night, for at least one year, often much longer, even though the patient should move about freely all day. Patients easily become accustomed to this extension, and are not disturbed by it in their sleep, though heavy weights may be attached.

A patient on whom resection has been performed for grave and inveterate contraction of the hip joint must have patience, because the surgeon must keep him under observation for a long time.

Weighing the advantages and the disadvantages of the two operations, for comparison's sake, I wish to emphasize the following points:

Osteotomy permits a complete or nearly complete correction of the deformity. It also corrects to a considerable degree the shortening of the limb, caused by the rocking of the pelvis on its antero-posterior axis. If there exist beside this (formerly so called) apparent shortening, a real shortening, caused by an arrest in the development of the extremity or by spontaneous luxation, separation of the head from the neck, etc., an artificial lowering of the pelvis can be produced by causing the femur (the latter having been separated by chiseling) to consolidate in the position of adduction, producing thereby

an apparent lengthening of the shortened limb. Osteotomia subtrochanterica is indicated principally in cases of grave, inveterate contractions accompanied by adduction, and of considerably shortened atrophied extremities. Should the separated bone become united again, the orthopedic result is secured for all time, and even the slightest relapse into the old position of contraction is impossible. With consolidation the orthopedic treatment ends—the patient may at once be left to himself to learn the use of the limb in its new position,—to exercise it and to gain power and dexterity by practice and exercise.

The aim of resection is to create a movable joint. The extremity—not considering the ankylosis and the contraction—must be placed in a tolerably useful condition,—not too much shortened, not too much atrophied; the vicinity of the joint not too much invaded by cicatrix, the bone not too extensively adherent to the thin integument. Especially if the necessary attention be not paid, a certain part of the orthopedic result obtained will at a later period be lost again.—Such is the case after all resections of the hip joint for very grave and inveterate contractions. The results of early and those of late resection differ considerably. It stands to reason that resection in cases of ankylosis and contraction belongs to the latter class. By attempting to merely overcome a case of long existing adduction, it will be difficult to secure any increase in the length of the limb—at any rate the result will be uncertain. The only advantage of the resection will therefore be active mobility of the joint, and this mobility will never be as extensive as can be obtained so generally by early resection for fungoid inflammation of the hip joint, but it was nevertheless, in all patients operated on by us, sufficiently complete to enable the latter to sit comfortably and to walk without being obliged to elevate the pelvis by flexion of the femur at the resected joint.

On the whole the advantages are all on the side of osteotomy. It will still continue to rank as the favorite operation and will especially commend itself in grave cases among patients from the laboring class. There will remain, however, some cases in which only resection is indicated. In the first place, if both hip joints are ankylosed, eventually here may be performed osteotomy on one joint and resection on the other, so that one

articulation will remain firm while the other permits of locomotion; I am treating at present a case of this kind. Secondly: Resection will always be preferred in cases where there exists no absolute certainty whether the morbid process in the hip-joint has already completely run its course. As is well known this question is not always very easy to decide. Though bony ankylosis be established, cheesy degeneration or sequestra may still be present in the bone. Parts of the head of the femur may be lodged in the acetabulum while the shaft of the femur is consolidated by bony union with the rim of the acetabulum, etc.

Finally it may happen that ankylosis has ensued—the head of the femur being greatly displaced outward and upward. In such cases we are obliged to begin always with osteotomy. If we find, however, in bringing the extremity (which is always greatly adducted), back to its straight position, that the separated bone surfaces cannot be brought into apposition, the diaphysis of the femur becoming dislocated completely inward, the head of the femur has simply to be separated from its shaft—total resection being performed as this head is the only impediment that prevents us from correcting the malposition of the limb. Total resection promises better results than osteotomy, leaving a false joint. After the articular head has been removed and thereby room has been gained, and the mobility of the limb been facilitated, we proceed to examine the no longer occupied acetabulum. As the case may be this will have to be gouged and enlarged for the better and more perfect adaption of the femur. I have pursued this method in several of my cases of chiseling.

F. MEUSEL & R. VOLKMANN. *Osteotomia Subtrochanterica.* (Korrespondenzbl. d. allg. ärztl. Vereins von Thüringen 1880, 1. Centralbl. f. Chir. 1880, 8.)

A girl of 14 years was operated on. She had been affected with ulcerative coxitis resulting in ankylosis and leaving the limb in a condition of marked deformity. The firmly ankylosed femur was flexed at an angle of 45 degrees, and adducted at an angle of 30 degrees. The diseased extremity had thus assumed a position in front of its healthy fellow, impeding the movements of the latter. The operation proved very successful: the deformity was completely removed by it, and after recovery the girl was able to walk with perfect firmness and in an erect position.

Herr Meusel resected the wedge of bone by means of the osteotome, and pleads in favor of this instrument "because it removes the wedge without communicating the slightest jarring movement to the bone." He mentions a case "in which necrosis of the dislocated head of the femur was caused by such motion, whilst chiseling the trochanter major."

Volkman says to this: "The esteemed author will pardon me if I pronounce this view of his erroneous, and based on still existing antiquated ideas which must be abandoned if a perfect understanding of antiseptic surgery is to be developed among practical surgeons. What would be the result of fractures of the neck of the femur which are produced by the pelvis striking like a broad hammer on the head of the femur, not only breaking, but even driving the neck deeply into the trochanter and thereby shattering the latter?" Says Volkman: Can all this happen without violent concussion, and if not, is there less in these cases than in chiseling the trochanter?

What we call necrosis of bone—the pathological separation of a portion and its exfoliation, does not take place without the co-operation of some kind of septic matter. On the other hand we have not the slightest support for the presumption that jarring motion or no jarring motion makes any difference as to the occurrence of necrosis—supposing that sepsis be present; on the contrary we think it is an established fact that by positive exclusion of septic matters lacerated tissues will heal in the same manner as tissues which have been separated by a sharp instrument, viz: without ulceration and without necrosis, at least without other than superficial necrosis. The sloughing of the directly destroyed tissue takes place by necrobiosis. In case the violent concussion is combined with extensive effusion of blood, then the ensuing septic ulceration may perhaps be followed by more extensive necrosis, because the sanious necrosial ulceration may spread further under such circumstances.

By itself the saw causes necrosis more readily than the chisel. If the sawing is done quickly (or as it is called "elegantly"), necrosis is caused partly by strongly heating the bone at the point of operation—by which even coagulation of blood in the Haaversian canals may happen,—partly by obstructing these canals by the bone-dust produced. The saw,—and the osteotome is a very coarse saw,—is the rougher, the chisel the finer, the more harmless instrument for bone work.

W. ROSER & KOENIG. *Diabetes and Sepsis.* (Deutsche med. Wochenschr. 1880, 1, 2. Centralbl. f. Chir. 1880, 7.)

"If an otherwise healthy man presents progressive, gangrenous or ulcerative disease, say of the foot or hand, if we cannot consider infection as being the cause, and if all application of carbolic acid etc. is of no avail, it is high time to think of Diabetes."

These are the introductory words of Roser's paper on the relation of Diabetes to inflammatory and septic processes. This paper indeed appeared at the right time, because the fact of the connection spoken of has not yet been sufficiently appreciated. Marchal de Calvi, having observed a large number of cases, was the first one who called attention to the frequency of the connection between Sepsis and Diabetes. Since then this subject has been discussed especially by French surgeons (Nélaton, Démarquay, Landouzy, and others), above all by Verneuil. It has also been noticed on several occasions by the Soc. de Chirurgie. Marchal has already called attention to the fact that the patients are by no means *always* reduced subjects with marked symptoms of Diabetes suffering repeatedly from furuncle, carbuncle, diffuse phlegmon and gangrene, but that they may be healthy looking, well nourished, middle-aged persons; Roser refers to this same circumstance to show the difficulty of diagnosis.

To show that such cases are not rare, Roser reports three that came under his personal observation. The first was a man of 42 years of age with progressive gangrene of the foot: Roser at once suspected Diabetes, and an examination of the urine confirmed his suspicion. Amputation, which had been proposed by another surgeon, was not performed. Anti-diabetic treatment which was commenced instead, arrested the progress of the disease; consequently, after partial amputation, recovery took place.

In the other two cases an ulcerated and necrosed small toe had been amputated; the wound not healing, after months of waiting, Roser was consulted. He found a large percentage of sugar in the urine. Anti-diabetic treatment resulted in a speedy recovery.

Dr. Koenig of Goettingen saw a similar case: A woman of full habit, some fifty odd years of age, had lost several toes by gangrenous sloughing; only anti-diabetic treatment brought on recovery, but the existing predisposition of the patient to severe gangrenous phlegmon finally caused her death. A large umbilical hernia suddenly resisted all attempts at reduction. The symptoms of strangulation were not of themselves grave, but gangrenous phlegmon invaded the covering of the hernia, and extended over the abdominal walls; this case seems to be an instructive one as to the genesis of diabetic gangrene. Roser is of the opinion that the latter points out an error in our theory of sepsis. While observing this case, Koenig developed a view of his own which may easily be tested by experiment. According to this view even gangrenous inflammation in diabetic subjects, is caused by infection through the agency of inflammatory irritants. The latter, however, are of such a nature that, in healthy persons, they would hardly bring on phlegmon of any significance; in diabetic persons having tissues abnormally nourished, chemically speaking, and with but weak power of resistance, and consequently predisposed to the necrotic process, they give rise to constant gangrenous phlegmon.

Roser, starting with this perfectly correct view, and basing his opinion on numerous observations which to a certain extent proved correct, remarks that the therapeutics of diabetic phlegmon must be considered from a standpoint widely differing from the therapeutics of similar affections in healthy subjects. We cannot expect that in the former class of cases the antiseptic treatment alone,—the application of carbolic acid etc., will be sufficient. First in importance stands the treatment of Diabetes by diet and internal medication. Amputations for gangrene may, according to circumstances, be permissible only after such diet and medicines have to a certain extent cured the patient. Roser as well as Verneuil forbid operations for instance for tumor, fistula, etc., in diabetic patients before the amount of sugar excreted has been diminished.

Roser calls attention to the fact, already noticed by Marchal, that slight affections of the skin, eczema, bullae etc., may also be caused by Diabetes. He further speaks of cases of sudden death of diabetic patients, which accident must be taken into consideration before operations; finally he mentions several cases of Verneuil, Massonry, and one of his own of considerable secondary hemorrhage in the same class of patients.

CRÉDE. *Nerve-Stretching.* (Transactions of the Gesellschaft für Natur und Heilkunde zu Dresden, 1870. Deutsche med. Wochenschr. 1880. 3. Centrbl. f. Chir. 1880. 10.)

Crédé presented a female patient who had been injured nine months before and had suffered, in consequence, from Neuritis ascendens of the left Nervus radialis. Three weeks before, Crédé performed successfully stretching of the Nervi radialis, medianus, ulnaris and cutaneus axillaris. Where they are covered by the Musculus coracobrachialis, these nerves were exposed to the extent of six cm., they were found accompanied beneath the sheath by serpentine veins and covered with some ecchymosis. After the fingers of the operator had stretched them forcibly in both directions, their greyish color changed at once into a dark red; simultaneously with this nerve-stretching existing contractions of the affected arm were corrected. The operation being accomplished, pain ceased, and the general condition of the patient improved rapidly. Crédé thinks that the success of the operation is to be attributed to a change of nutrition in the nerve caused by the stretching. This change of nutrition (a great fullness of the blood-vessels being perceptible immediately after the operation) probably having the effect to promote absorption of existing exudations. Besides this, the happy result may have been obtained by breaking up adhesions that were present.

E. KLIN and A. KNIE. *Case of Tetanus Traumaticus treated by Nerve Stretching.* St. Petersburg Medical Weekly—in Russian language. 1879. 33. p. 307. Centrbl. f. Chir. 1880. 2.)

Patient had sustained on June 5th, 1879, a compound

Dorsal-Dislocation of the last phalanx of the right thumb. On the second day after the injury fomentations of lead-water were applied, then after reduction had been attempted without success, resection was performed. Oedema of the hand set in. First change of bandage was made June 12th, and renewed application of a disinfecting solution on account of suppuration. June 17th was attacked by tetanus without fever. June 18th, opisthotonus was present. Temp. 39.5 C. June 19th, after patient had taken morphine and chloral, stretching of the Plexus brachialis in the neck according to Vogt's method was performed. In spite of forced peripheric and central stretching the contraction of the hand and the fingers still remained. Trismus and Tetanus, however, had for the time being disappeared—except that there was an attack of general convulsions on awakening. But soon after, on June 20th—Trismus reappeared; June 21st, the Opisthotonus also returned. June 22d—Tetanus of the muscles of the thorax and of the abdomen was present and though Curarin $\frac{1}{2}$ gr., chloral and morphine were administered, death occurred from oedema of the lungs on June 23rd.

Post mortem appearances: Wound on the neck without suppuration; the spinal marrow, the Brachial plexus and the nerves of the upper and the forearm were of a pallid color. The branch descending from the Medianus to the thumb was found in the wound, torn, and floating in pus.

The authors, though they were not successful in this case, would not decry the operation of stretching.

BLUM. *Paralysis of the Radial Nerve resulting from an Injury to the Forearm.* Disorders in the track of innervation of the Medianus. Stretching of the Radial and the Median Nerves. (Bull. de la Soc. de Chir. de Paris. T. iv. No. 10. Centrbl. f. Chir. 1880. 1.)

A man, 27 years of age, had received a stab wound in the upper part of the right forearm. This wound having cicatrized, symptoms of paralysis in the track of the N. radialis and medianus set in. The forearm was emaciated, the integument red, shining and spotted. The cicatrix was situated between the nerve trunks, somewhat elevated above the skin, and very tender upon pressure.

An incision was made along the radial margin of the cicatrix, and the trunk of the N. radialis exposed. The latter which was slightly reddened, otherwise healthy, and not compressed, was stretched in both directions. The same was done with the N. medianus.

The sensibility returned on the very same evening in the track of the Radialis, and on the day following in the fingers which had been paralyzed; the contractility of the muscles likewise improved. The wounds having healed, there was only a numbness left over a small circumscribed space on the dorsal surface of the thumb. The paralytic symptoms had disappeared.

NEW YORK. June 1, 1880, Drs. Gross, Douglas, Weiss and other distinguished Surgeons assembled—Dr. Lewis A. Sayre presiding—and founded an American Association of Surgeons (the exact name of the society is not yet decided upon). This society will, like the Congress of Surgeons in Germany, meet once a year for a three days' session. There will be 125 members only, 100 active, 25 honorary, of the latter 10 Americans, and 15 foreigners. Only those are eligible who have distinguished themselves as writers and teachers or by their original researches. Dr. Samuel D. Gross was elected president.

International Trade Department.

Under this heading we propose to add a new feature to the INTERNATIONAL SURGICAL RECORD, viz : a department devoted to the interests of manufacturers, dealers, and importers, at home and abroad, of surgical instruments, apparatus and appliances,—of druggists and dealers in druggists' sundries, of those trading in rubber goods, glass-ware, hospital stores, and all other materials and appliances used in the treatment of disease and for general hygienic purposes,—also of medical attendants, and managers of hospitals, sanitariums and clinics.

American instrument-makers are well aware how highly American inventions are appreciated abroad, and the French and German manufacturers know equally well that America affords a lucrative market for their goods ; in fact the flourishing condition of international trade in general is one of the characteristic signs and blessings of our times.

To the interests of International trade,—to the interests of each and every one of the several industries above enumerated we therefore propose to devote this department, thus not only, as we believe, increasing the value of our publication but also supplying a want which has long existed.

In presenting this sample number, we wish to ask the manufacturers mentioned to send us communications descriptive of their specialties, or news accompanied by electrotypes, for insertion in our editorial columns.

There will be no charge for the insertion of contributions to the editorial columns of the International Trade Department.

Unter der Ueberschrift The International Trade Department fügen wir zu unserem International Surgical Record ein Fachblatt für Verfertiger chirurgischer Instrumente, Apparate, Bandagen, für Mechaniker, Optiker, im Allgemeinen für alle Verfertiger und Lieferanten von Dingen, die Heilzwecken dienen.

Allen Fabrikanten in Europa ist bekannt, daß Amerika ein guter Markt für ihre Erzeugnisse ist; wir diesseits des atlantischen Oceans wissen wie hoch amerikanische Erfindungen in Europa geschätzt werden.

Die Lebhaftigkeit des internationalen Handelsverkehrs ist ein charakteristisches Zeichen der Zeit und ein Glück für die Gesellschaft.

Den Interessen des internationalen Handels, aber auch den Interessen jedes einzelnen Fabrikanten und Lieferanten von Hilfsmitteln für Krankenpflege und Heilzwecke in Amerika und in Europa ist das International Trade Department gewidmet.

Wir bitten jedoch alle Fabrikanten, in deren Hände dieses Blatt gelangt, in ihrem eignen und im gemeinschaftlichen Interesse uns sofort für den editorielle Theil eine Beschreibung ihrer Neuigkeiten, womöglich begleitet von einem Stich, zuzusenden.

Die Aufnahme der Beiträge für den editorielle Theil geschieht unentgeltlich.

PARTIE COMMERCIALE INTERNATIONALE.

Sous ce titre nous nous proposons d'ajouter une nouvelle section à l'International Surgical Record, destinée à traiter les questions d'intérêts pour les fabricants, négociants et importeurs dans les États Unis et à l'Etranger de produits chimiques et pharmaceutiques, d'instruments chirurgicaux, de caoutchouc, de venerie, de calorifères pour salles de malades et hopitaux

et en général de tous les articles nécessaires au traitement des différentes maladies, ou à la conservation de l'hygiène; et s'occupant aussi de sujets d'intérêts pour les directeurs et docteurs d'Hopitaux, maisons de santés et cliniques.

Les fabricants d'instruments Américains savent la plus part par expérience combien les inventions Américaines sont appréciées en Europe, et les fabricants Français et Allemands savent aussi que l'Amérique est un lieu d'écoulement lucratif pour leur marchandises, en quelques mots la condition florissante du commerce d'importation en général semble être le signe caractéristique de notre époque.

C'est aux intérêts du commerce international; aux intérêts de chacune des branches ci-dessus énumérés que nous voulons consacrer cette nouvelle section de notre journal, qui non seulement augmentera la valeur de notre publication, mais aussi remplira une lacune qui n'a que trop longtemps existée.

En envoyant cet exemplaire nous voulons demander à chaque fabricant qui le recevra de nous faire parvenir une description de ses spécialités accompagnée de clichés ou Electro-types pour que nous les inserions dans nos colonnes.

Les insertions dans les colonnes éditoriales de la partie commerciale internationale sont faites à titre gracieux.

SUMMARY REPORT OF PATENTS

Granted by the German Government during the years 1877 and 1878, of the 30th class, (Hygiene). By Dr. G. BECK. (*Illustrirte Vierteljahresschrift der Aerztlichen Polytechnik*, 1879.)

The number of appliances of service to special medical and surgical therapeutics is not large, the inventive genius appearing to have been more occupied with the care of the sick, the hygiene of children, and other subjects of interest to the general practitioner.

We begin with trusses, which we find represented by several specimens; Baehr's of Solingen (458),* Loewy's of Berlin

(906), Hoppe's of Basel, and Dr. Edel's of Hannover, which latter, however, date back from the year 1876. Besides these, we should mention the truss of Schmidt of Barmen (3731), the pad of which,—if we understand the illustration and the description correctly,—by means of a spring mechanism can be made to assume any desirable angle to the main spring, as well as to revolve on its own axis. As to the practical value of this appliance, we cannot speak without further experience; judging from its construction it must be expensive, which circumstance may prove an impediment in the way of its general adoption. Weiss of Crefeld has invented a truss (3542) of which both the pad, and the lining of the spring, can be filled out as the patient may desire.

As to prosthetic apparatus, we find first an artificial limb constructed by Meyer of Nuremberg for amputation of the thigh (1938).

It is particularly the construction of the ankle-joint which is noteworthy,—the latter securing, besides great firmness, a natural, elastic gait. We have also an artificial foot constructed by Oscar Dalisch (733); the principal advantage exhibited in this appliance is its adaptability to any irregularities of surface, this peculiarity being secured by the skeleton of the foot being composed of several portions of wood which articulate freely with each other, and the whole covered by a rubber shoe, with an extra heavy sole. The same inventor also presents a metallic artificial hand (294) in which flexion and extension of the fingers is secured by pronation and supination of the stump of the forearm; for amputation of the arm he has also made another apparatus that enables the patient to open and close the hand at will, (1683), as a motory power making use of the act of adduction of the arm against the thorax; in the axilla he places a rubber ball inflated with air, which communicates with another situated in the fore-part of the wrist-joint, by means of a rubber tube passing through the interior of the artificial arm. By the compression of the former in the axilla, which causes inflation of the latter, flexion of the fingers is produced. (We have not had the opportunity of examining the artificial limbs above described, but we doubt whether in the ingenuity displayed in their construction or their general utility they can surpass those of Dr. Palmer and Dr. Bly, described elsewhere in our columns.—The article on Dr. Palmer's limbs

* The figures in parentheses indicate the number of the patent.

will appear in the next number of this journal.—Editor.)

The specialists on diseases of the urinary organs receive from Nitze of Dresden a new endoscope which is constructed exactly upon the principle of Dr. Schramm's which we described and illustrated in our last issue. The source of illumination is a platinum wire introduced into the urethra, injury to the mucous membrane of the latter being prevented by a delicate tube which surrounds the wire and is kept moist by a constant current of water; this instrument can only be of service to physicians whose galvano-caustic apparatus is in daily use. Dr. Stephan (29) and Dr. Fowler (as Campbell's pessary, 2300) present new pessaries, which we mention elsewhere. Détert of Berlin has invented a four-blade speculum with which unfortunately we are unacquainted, since the pamphlet describing it was not accessible to us. A uterine douche by Ardouin of Angoulême,—an ordinary douche connected with a contrivance similar to a commode, offers nothing of particular interest.

Goldschmidt of Berlin (2749) presents two new forms of ear-trumpets, the one for slight, the other for more marked degrees of deafness, which, as to acoustics, offer no advantages over those already known, though they are commendable for their neatness, and the convenience with which they may be carried about.

Dr. Ahl of Newville (U. S.), offers new felt splints (1439), the preparation of which is described in the following terms: The felt having been cut of the desired shape, is saturated with a solution composed of 2 kilogrammes of shellac in 4½ liters of alcohol, then dried, and after drying, perforated with needles; to harden the shellac, the felt thus treated is then immersed in a mixture of 500 grammes of sulphuric acid and 135 liters of water, and finally washed with cold water. To render the splint pliable before application, it is immersed in hot water.

(Our readers will find in another column of this number a description of Johnston's Improved Ahl's Splint. Mr. Johnston informs us that Dr. Ahl being dead, he is the only manufacturer of these splints, which are far superior to the original ones of the inventor.—Editor.)

Haselbach of Jauer uses on the extremity of the piston of syringes (1718) paste-board saturated with oil, thus obviating the well known objections to the use of other materials, such as leather, felt, hemp, cork, etc. Détert of Berlin has

invented a very practical folding apparatus, to serve as a reservoir for fluids for injection (2750); the latter can be detached and the tube used alone in the manner described by Mosler. Another advantage is aimed at by the Irrigator of Kohm of Carlsruhe (36), the receiver of which is supplied with a register, by which means the rapidity of the flow of the liquid is indicated, and hence any impediment to the current can be easily detected.

Heinemann of Hagen has constructed a cephalic douche (136), which can be used by the patient while dressed and in a sitting posture,—a very practical idea and one that will be welcomed especially by insane asylums. Galbraith of Londonderry (Ireland) presents a portable apparatus (67), by means of which hot air baths can be used by patients confined to bed, not only in the form of a general bath but can also be made to act on the respiratory organs, or locally on any particular portion of the body desired. The indication for such applications presents itself frequently, and it is to be regretted, that the high price of such apparatus excludes them from general use in private practice.

The anatomizer of Dr. Teuffel of Stuttgart for producing the "surgical spray" combines the advantages of easy cleaning with high steam pressure and corresponding very powerful volume of spray, which, without changing the position of the apparatus, (and without the attending danger of burning one's fingers!) can easily be directed to any point of application desired. Steam spray atomizers for medical purposes have been very practically improved by Ohm of Chemnitz, and Leng of Leer (1571), by the attachment of a funnel shaped reservoir for the medicated solution, by means of which the latter can be introduced into the main compartment of the apparatus, or shut off at will by means of a stop-cock. For the inhalation of volatile substances in their crude form or in solution, as well as for the introduction of medicated vapors into the different cavities of the body, very practical additions have also been made.

The new method of treating phthisis by means of the inhalation of partially deoxygenated air lends a particular interest to the apparatus of Dr. Treutler of Blasewitz, near Dresden (999). This apparatus has for its fundamental principle that of the oxydation of Ferri Sulphas, by exposure to atmospheric air, which process, according to Treutler, can be continued *ad infinitum* by keeping the Ferri Sulphas

in constant contact or mixed with metallic iron, the latter deoxygenizing the resulting Ferric Oxide while in *statu nascendi*; the admission of atmospheric air is secured by means of Waldenburg's double pneumatic apparatus. Dr. Treutler has described his apparatus and method of treatment in a special pamphlet.

By Loeb of Berlin has been invented a somewhat complicated apparatus for protecting the respiratory organs from the inhalation of dust and gases that are detrimental to health (1328 and 3191), which, considering the importance of the subject, is deserving of trial by competent judges. On the last model several improvements have been made, noticeably, an arrangement by which the apparatus can be used in apartments where there is a deficiency of oxygen, since by means of a tube communication is secured with the external atmosphere; another tube provides a way for leading off the saliva from the mouth, etc.

The International Factory or the manufacture of materials for surgical dressings, at Schaffhausen, pursues with untiring energy its aim to popularize the antiseptic treatment by a marvelous collection of every possible appliance connected with the same, and by its attempts to facilitate the portability of the latter. Its latest antiseptic dressing case (3312), accomplishes in this respect all that can be desired, but since it is already so well known through pamphlets that have been issued in large editions, any minute description would be superfluous at this time.

Nearest to the subject of antiseptics stands that of disinfection with which the medico-polytechnic genius is also assiduously occupied. Dr. Grosschoff of Rostock has invented a very practical and simple apparatus (3197), by means of which, when attached to the seat of the water-closet, a definite portion of a disinfecting powder reaches its destination. Although this apparatus is easy of transportation, it has only a limited application, while the self-acting rinsing and disinfecting apparatus of Friedrich of Plagwitz near Dresden (1321), is of more general utility for architectural purposes. Poehl and Meltzer of St. Petersburg offer a practical apparatus for the disinfection of dwellings by means of ethereal oils (4265).

Lefèvre of Paris (1316), and Brünning of Berlin (869), have been granted patents for mechanical beds, which, however, do not seem to us to be characterized by any marked improvements. The most notice-

able feature of the former's is the arrangement of the pillow in such a manner as to accommodate any change in the position of the head; of the latter's is a movable apparatus placed beneath the bed for defecation.

The operating and examining table of Dr. Retzlaff of Berlin (3040), possesses, as it appears to us, a characteristic and practical feature. By shifting the position of the headpiece, which can be changed as the operator desires, the table can be lengthened or shortened to serve all purposes. Two footpieces which are movable in any direction, afford a firm support to the feet, and hence dispense with the necessity of assistants to hold the feet of the patient; the table can be folded together so as to occupy a very small space, and will therefore commend itself especially to military surgeons. Everything possible has been done by Dr. Wilkerson of Baltimore (2728), to accommodate the wishes of dentists concerning an operating chair, the complicated mechanism of whose invention claims no less than 38 patents. Friedrich Roth of Burbach, near Siegen, has invented a pneumatic apparatus, shaped like a piece of furniture, to be used for indoor gymnastics (128); it possesses no advantages over the simple and less expensive rubber tubes used for the same purpose.

We find enumerated many substitutes for mother's milk, as well as various patterns of nursing bottles, a proof of how powerfully the women of our times are exercised by the desire to raise healthy children on the bottle, without being disturbed in their struggle for the realization of a higher human ideal by trivial care for their posterity. Dünninghaus of Unna (488 and 1781) takes great pains to dispense with the use of all rubber for feeding bottles, because it is difficult to keep the rubber portions clean, and makes use of glass tubes which are connected together by metallic ball-and-socket joints. Haertel of Breslau (824) presents a bottle for atrophic children who do not possess the strength necessary to nurse; the apparatus demands a conscientious nurse to keep clean the rubber of which it is largely composed, if the advantages aimed at shall not become illusory. Waldner of Kolmar (1518) secures the introduction of air into the bottle by means of a valve inserted in the cork, which cannot get out of order and is in constant motion, thus enabling the infant to nurse continuously. The same aim is accomplished by Siebenlist of Berlin (3101) by attaching to the

rubber nipple a small spiral shaped tube which permits the air in the nipple to communicate with the vacuum in the bottle; retention of milk in this tube and its consequences can scarcely be avoidable. Meyer of Berlin, (1933) attaches a thermometer to the nursing bottle by means of which the temperature of the food as well as of the apartment is indicated.

Cauty of Liverpool substitutes a rubber bag for the ordinary poultice; the outside of this bag is covered with felt, sponge or some other hygroscopic material. The bag itself is filled with hot water, and thus a permanent heating of the moist, external material is secured. We think this apparatus is deserving of universal adoption, the more so since it can also be used for the application of ice or cold water.

The muscle-percussor of Klemm of Riga (153) is another invention already very much and deservedly in favor.

Krikil of New York, (1660) overcomes a decidedly objectionable feature of the "Inexpressibles" in ordinary use by means of his "health-riding pants." He uses in each leg the "Suturæ Poupartii" instead of a suture sagitalis, by means of which all disagreeable friction is avoided; especially when riding. The figure, by means of which the deserving artist illustrates his Health-pants, resembling one of those that we see on playing cards, presents to the gracious admirer with profound grace a bouquet, and with this we conclude this summary report.

To complete the list we add also the Pharmaceutical Patents of the 30th class, without, however, attempting to describe them:

Morgan Richards of London: Perforated pills and machine for their manufacture (134).

Limousin of Paris: Apparatus for manufacture of capsul. amyl. opercul (747).

Bergholz of St. Petersburg: Apparatus for preparation of elastic gelatine capsules (2448).

Nanz of Friedberg (Hessia): Method for making cigars for asthmatics (3100).

Müller of Sangerhausen: Box for filtering and infusing (4383).

Digne of Marseille: Apparatus for manufacture of compressed powders (4383).

IMPROVED AHL'S ADAPTABLE POROUS FELT SPLINTS. Manufactured by Ahl's Splint Manufacturing Co., 517 Locust Street, Philadelphia.

These splints are made of an all wool felt, prepared expressly for the purpose;

by a peculiar manipulation during the manufacture of the felt into splints, all stiffening agents used are driven into the centre layer of loosely felted fibre, so that when in a finished state, either surface of the felt splint thus prepared remains, as before treatment, soft and smooth. The felt is then moulded over blocks made like the longitudinal half section of a human limb, and are true to nature—in number sufficient to accommodate every fracture that is possible to the extremities including also many others in different regions of the body.

The great advantage of this system is very apparent; for, while the physician in one sense, has a ready-made splint, yet in another it is not so;—being simply conformed to the correct outline of the various regions of the human body anatomically. The surgeon can select the proper splint without trouble, possessing, as each does, the general form and shape of the part fractured, and can instantly adapt it accurately to the inequalities of the surface and mould it in accordance with any peculiar idea he may possess, thus making it an instrument in his hands of convenience subject to his will. To accomplish this, he will immerse the part in which a change is desired, in boiling water;—will lay a cloth soaked in cold water over the fractured part of the limb; and apply the splint, which at once yields to every touch; he will then mould it just right, remove it carefully, and plunge it into cold water for a minute; or make cold applications to the outer surface, without removing the splint, when it will have become rigid and hard as before. This process can be repeated with a single piece any number of times without destroying its usefulness.

Mr. Johnstone, the manufacturer, says, among the numerous objectionable features of Plaster of Paris and Silicate of Soda bandages, now in such common use, for diseases of the spine are two vital ones.

First. The support should be equable and continuous: This cannot be attained by either the Plaster of Paris or the Soda dressing. For the reason that the bandages are applied while moist; the patient being suspended during the operation cannot remain in such an uncomfortable position until the bandages have become set and dry: to loosen the traction and lay the patient down, is to instantly alter the shape of the jacket, which, however carefully done, cannot avoid the above result; therefore the object of extension

is destroyed before the benefit begins. Then again, as the moisture evaporates, the wrap loosens of its own accord and even if the first objection could be avoided, this latter would cause the same detrimental result, an imperfect, uneven, unreliable support, while the very reverse is absolutely necessary to attain the desired end.

Second. A more serious objection can be set forth against any of this class of dressings, in the fact that being impervious to air and transpiration, preventing cleanliness and freedom, precluding proper and healthful exercises, they must certainly produce debility of the part encased, and consequent atrophy of the muscular tissue which alone renders the support, no support at all, but simply a loose shell of no real value after sixty days' wear: retarding normal action, and invigoration of the system. These reasons necessitate frequent renewals and accompanying discomfort.

The adaptable felt splint envelope is not only free from all the objections and drawbacks observed and learned by experience in the use of other dressings, but fulfills all the indications that can be thought of or wished for in a perfect splint.

To obtain a felt jacket, it is required to simply take an accurate cast of the part to be supported, with the usual bandages and Plaster of Paris. Suspend the patient, make a wrap about half the thickness which would usually be made for a permanent support. The desideratum attained by this is that the shell can easily be removed from the body while still under suspension, thereby preserving the exact outline of the body. From this shell a mould is made which becomes a counterpart of the body of the patient, over this mould the felt envelope or splint is made.

It is sure to fit perfectly; it is made to lace up in the front with room to tighten as the yielding of the disease may permit; any point that may be desirable not to press at all, can be made to ride over it freely, as the breast's compression is perfectly easy to avoid.

Cracking, shelling off, irritation or abrasion are impossible, and by means of the lacing feature the support can be removed at times for cleanly purposes: water or moisture does not impair the strength of the material a particle; no odor is emitted even in the hottest weather. The jacket is light in weight so that it does not become a burden to the afflicted.

No comparison regarding this last feature can be made between these jackets and the Plaster of Paris or soda jackets.

They will outwear four plaster jackets, and during all the time of their service they are rendering firm support.

G. O. SCHPOLIANSKI ON ARTIFICIAL LIMBS OF FELT.

(Wratsch 1880, No. 8. Centralbl. f. Chir. 1880, No. 16.)

S. recommends that artificial limbs be made of felt of 6—8 mm. in thickness. The felt is repeatedly immersed in a solution of 1 part of shellac in $\frac{1}{10}$ part of turpentine and $1\frac{1}{2}$ parts of alcohol, and hardens in from $\frac{1}{4}$ to $\frac{1}{2}$ of an hour. A more detailed account is given in the original. S. claims for his limb, which, however, in other respects is an imitation of Mathieu's, that it is equally as durable as one of wood, that it is light (3—5 lbs.) and cheap, and that the surgeon or the patient, even if without mechanical skill, can not only manufacture but also repair it. Two of S.'s patients wore a leg for a month without any repairs being necessary.

MARTIN'S GUM BANDAGE. Manufactured by F. G. Otto & Sons, 64 Chatham St., New York. In Strips of 3 or 6 yards. This bandage has been applied in place of elastic stockings, and in many cases is preferable to the latter, especially where the ankle is very small and instep high; the pressure can be easily regulated by more or less tension, there will be no folds, and the durability by far exceeds that of elastic stockings.

DR. EBENEZER SWIFT'S PILE SUPPORTER. Manufactured by Geo. Tieman & Co., 67 Chatham Street, New York. This pile supporter is made of rubber, semi-solid, and very flexible, and of the correct shape for introduction and retention in the rectum.



After the piles have been reduced in the ordinary manner the pile supporter, well lubricated, is passed into the rectum on the withdrawal of the finger, and is kept in place there by a T-bandage and compress. One napkin is passed around the waist, and the two ends fastened with a safety-pin, and a second napkin having a folded one fastened to its centre for a compress over the

anus, is passed between the legs and secured to the other napkin in front and behind with safety-pins, being drawn up as tightly as is consistent with the comfort of the patient.

The support produced by the combination of the rubber pessary and the T-bandage is both external and internal, producing rapid absorption and cure without pain, and affords great relief to the patient.

A mirror may be placed at such angle that the patient can see the whole procedure and learn how to practice it upon himself, which he has to do every morning on rising, each night on retiring, and after each defecation; in most cases the latter only will be necessary.

HERNIAL SYRINGE. By W. B. De Garmo, M. D., New York. Manufactured by Geo. Tiemann & Co., 67 Chatham Street, New York.



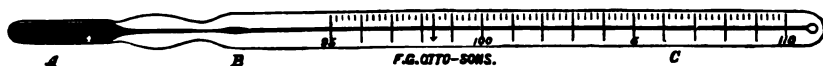
This instrument is a modification of Dr. Heaton's Syringe. The first modification is the addition of a screw piston with a crescent-shaped bar at the end of the same, and in having the exterior of the barrel furrowed (*A* to *B*) instead of smooth.

In order, however, to deprive the operation of its dangers, there is added the trocar needle shown in the cut *C*. The principle involved in the construction of this needle is the design of Dr. Simon Fitch, who first introduced it as the "dome trocar." *D* represents the cutting point of the needle exposed; *E* shows it with the point protected in such a manner that no injury can be done to the canal or vessels.

The hernial syringe is used in the following manner: it should be charged by removing the needle from the barrel and filling the latter two-thirds full; the central part of the needle is then replaced; then, with beak elevated, sufficient of the irritant should be ejected to leave the barrel about half full. By this means all air is expelled and the perfect action of the syringe is secured. The sheath is now slipped on and it is ready for use. After penetrating the tissues with the cutting point of the sheath, it is drawn back so that it is perfectly protected, and the beak is then carried well into the canal without

fear of injury to its tissue, or to the vessels and nerves which are in close proximity to it. The crescent of the piston is now held firmly in the palm of the hand, and the barrel of the syringe is revolved between the thumb and finger of the same hand. In this manner the needle is revolved and at the same time is gradually withdrawn, thereby traversing the entire length of the canal and distributing the irritant over its interior surface. A light truss should be worn for at least six months after operation.

The capacity of the syringe is twenty minims.



THE RESERVOIR THERMOMETER. Manufactured by F. G. Otto & Sons, 64 Chatham Street, New York.

The advantages this thermometer possesses over all others, consist in the reservoir *B*, in which the registering part of the mercury is collected, forming a body of oblong shape. The surface of this body being large in comparison to the contracted bore, makes it impossible to unite the register with the mercury in the bulb *A*.

A TRIAL CASE FOR TESTING THE VISION. Intended for the General practitioner. Manufactured by Meyrowitz Brothers, 297 Fourth Avenue, New York.



This trial case was designed by Drs. D. B. St. John Roosa and Edward T. Ely, especially to meet the demand of physicians in general practice, to enable them to test the vision of any patient, to make a careful diagnosis of some of the more common optical defects so often met with, and give them the power to shield their

patients, to a degree, from the baleful influences of the ordinary country vender of spectacles.

It will be particularly useful to the family physician in the examination of patients, who, without external evidence of disease, still complain of their eyes, and enable him to put them upon the road to proper treatment. It is the duty of every physician to urge upon his patients the proper care of their eyes, and thus to do his share toward mitigating a large amount of suffering and loss of usefulness due to neglect.

Specially important is it, that the vision of young children in families and schools should be tested in reference to myopia. If an early diagnosis of this effect can be made, and the subject brought under proper treatment, progressive short-sightedness and all its attendant miseries can be largely prevented.

It is confidently believed that this case will, in the majority of instances, meet all the necessary requirements.

Figure 1 shows complete case.

It contains thirty-six pairs spherical trial glasses, convex and concave (eighteen pairs each); they are numbered from 5 to 60, which is nearly as large a range as is to be found in much more expensive cases.

A frame for holding the trial glasses, in which the glasses are held firmly while in use, but can be easily changed, enabling the examiner to make any desired combination.

There is also a set of Jaeger's test-types for near and distant vision, and some general directions for use.

Figure 2 shows frame with glasses in place.

Although the case is not intended to take the place of any now used by specialists, it is thought suitable for fulfilling the purposes already indicated, and that a more ambitious plan would render it less generally useful. It is offered to the profession at a price so low as to be within the reach of all.

DRESCHER'S PATENT, POCKET ELECTRO-MAGNETIC MACHINES. Manufactured by F. G. Otto & Sons, 64 Chatham Street, New York.

These new and powerful portable machines resemble in style and appearance the French "Gaiffe" instruments, but are far superior, embodying important improvements, whereby an electric current of much greater intensity and longer du-

ration is produced *with the same charge* than in any instrument extant.



The Drescher machines are not only more economical in operation, more satisfactory in use, and more powerful in effect than the French machines, but are furnished at much less cost.



They are manufactured in three sizes, viz :

No. 1. With one Battery Cell. Fitted in a neat mahogany case. The power of



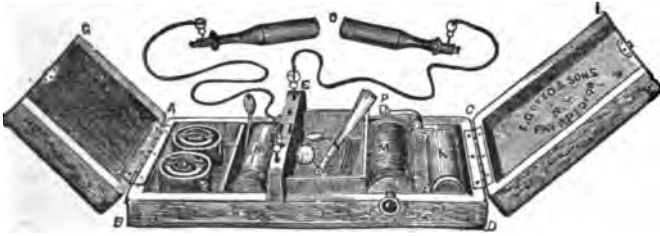
this small single cell machine is sufficient for all ordinary therapeutical applications. It may be carried in an ordinary pocket.

No. 2. With two Battery Cells. This

fine instrument is enclosed in a polished mahogany case, similar in style to that of No. 1. It is exceedingly powerful, yet very compact, and may be readily carried in an overcoat pocket.

No. 3. A superior Two Cell Machine. Handsomely mounted in a double-lid case, as above illustrated, and fitted with extra electrodes.

Drescher's Patent Carbon Cell and Annular Zinc Plates.



Our Improved Pocket Machines are all fitted with Drescher's Patent annular cells. These are constructed simply of an annular carbon cup which in itself constitutes the negative rheomotive element of the cell, and for its positive element has an annular zinc plate supported by and revolving upon an insulated, central pillar. The concentric construction of the cell exposes in the smallest space the largest possible surface of both zinc and carbon to the action of the contained oxydizing fluid. One of these small Drescher cells is therefore more powerful, and will generate a current of far greater intensity than an ordinary cell of two or three times its size. It permits also a revolution of the zinc plate as required for the purpose of agitating the fluid in the cell to overcome its polarization and inertness, and maintain its constancy.

DR. EMIL GRUENING'S MAGNET for the removal of particles of steel or iron from the vitreous chamber. Manufactured by John Reynders & Co., 303 Fourth Avenue, New York.

Several magnets are joined into a bundle, thus making a powerful magnetic magazine, and concentrating the greatest possible magnetic polarity in the least possible dimensions. A long and delicate piece of malleable iron is fitted into one extremity of the bundle of magnets. As shown in the cut, the two extremities of a number of magnetized steel rods placed parallel to and at a little distance

from each other, are fitted into iron caps, one of which is provided with a delicate point of malleable iron 3 mm. long, 1mm. wide, and 0.3 mm. thick. This point is powerfully magnetic, sustaining, with ease, a weight of 15 grammes. Chips of iron weighing from 1 to 50 centigrammes, when placed into the vitreous of recently enucleated animal eyes, are attracted toward the point at a distance of 1 to 5 mm., and withdrawn with the greatest facility. The instrument thus perfected *equals* Hirschberg's electro-magnet in efficiency, but *surpasses* it in simplicity of construction, convenience of form, and lowness of price.

DR. BLY'S ANATOMICAL LEG. Manufactured by Geo. F. Fuller, 27 Arcade, Rochester, New York.

Fig. 1, a sectional elevation. The ankle joint is formed by a ball, *B*, of polished glass, plying in a socket of vulcanite of india-rubber, which is a joint that admits of every motion that the natural ankle does, without an exception, and is the first joint ever invented which *never* requires oiling.

S, three of the four India Rubber springs, which take the place of the muscles of the natural leg.

C, the tendons which pass through the springs with screw-heads on the upper ends. Only three are shown in Fig. 1, but the lower ends of all four are shown in Fig. 2.

N, the nuts by which the tension of the tendons and springs are regulated to suit the wearer.

E, the spring which operates the knee joint.

Fig. 3, Leg without side motion at the ankle, but with a self-cleaning ankle bolt.

Fig. 4, shows the curved joints (*X*) on either side of the knee, for amputations below the knee. The curve corresponds with the natural knee, and allows the pants to set smoothly.



Fig. 5, shows the joints for the same purpose, as constructed by other makers.

Fig. 6, represents a mechanic wearing one of these legs. The lateral motion at the ankle enables him to plant the foot flat on the floor, and at the same time spread the feet to brace the body, when about to strike a powerful blow. The same action is often required in all kinds of labor.

Fig. 7, represents the ankle joint flexed diagonally, as is often the case when one side of the foot happens to be placed on a small stone, or other obstacle.

Fig. 8, represents a front view, showing its exquisite beauty; also the action of the ankle joint when walking on the side of a hill, or on an inclined plane, the foot accommodating itself to the surface, like the natural foot.

The ankle joint in this leg is made without iron or any kind of metal, therefore the leg is extremely light—much lighter than any other. The liability of metallic joints to rattle and make a noise, after the leg has been worn a short time, is well known, and the annoyance which it causes the wearer at every step is also well known. Now, as there is no metal about this joint, there is no noise. The joint is formed by a ball of polished glass, plying in a socket of vulcanite of rubber. (See Fig. 2.)

This joint accomplishes the great object which all Artificial Leg makers have hitherto sought for in vain, viz: it admits of motion in all directions like the natural ankle joint and thereby allows the artificial foot to accommodate itself to the varied inequalities of the surface, the same as the natural foot. (See Figs. 7 and 8.) This enables those who wear it to walk so well, that it is not even suspected, much less detected.

Furthermore, this is a joint which requires no oil, a fact of no little importance, as those will testify who have worn legs with metallic joints, and been obliged to carry pocket oil cans.

In the places corresponding to those occupied by the muscles of the natural leg, are placed india rubber springs with tendons, (see Fig. 1 and 2,) extending downward in place of the natural tendons; and it is really interesting to see how well the action of the rubber springs imitate those of the natural muscles. These rubber springs or artificial muscles, together with the ball and socket joint, produce

every motion of the natural leg, without an exception.

The springs are made of rail-road car-spring rubber, and used by compression, therefore it is not possible to overtax or break them; I repeat, it is not possible to break them. This will be appreciated by those who have worn legs with metallic springs; especially by those who have worn the Palmer leg.

The power and action of all the springs in this leg are regulated simply by turning a nut, so that the wearer may adjust them to suit his own peculiar gait, with great nicety.

Instead of the mechanical motions given a limb by metallic springs, the rubber springs impart easy, uniform motions to the limb, like those of the natural muscles, which give it, when in use, a remarkable life-like appearance.

For further description of this excellent limb we refer to Geo. R. Fuller's illustrated pamphlet on the same.

Our highly esteemed friend, Mr. Th. Warker, so well known in New York as one of the first to introduce in America the manufacture of artificial mineral waters, and who at present lives at Paris, France, has invented and presented to the Academie de Medecine à Paris an apparatus by means of which all the warm mineral waters, such as Carlsbad, Vichy, etc., can be provided at their original temperature, no matter how distant from the spring, without loss of gas or other medicinal properties.

The apparatus is intended to furnish the very waters themselves taken from the spring, and not artificial preparations—and that too without addition, or alteration, or loss, or change of any of their component parts. The importance attached to the temperature at which these waters are taken is well known to all medical men; thus Carlsbad water for the use of those to whom the spring is not accessible, is generally ordered to be warmed by the addition of hot water or milk, both, however, being inferior to the water at its original temperature without addition.

We regard Mr. Warker's invention as one of great progress, and one that will be of immense service to medicine and to suffering humanity generally. We hope soon to be able to furnish our readers with a complete description and illustration of Mr. Warker's apparatus.

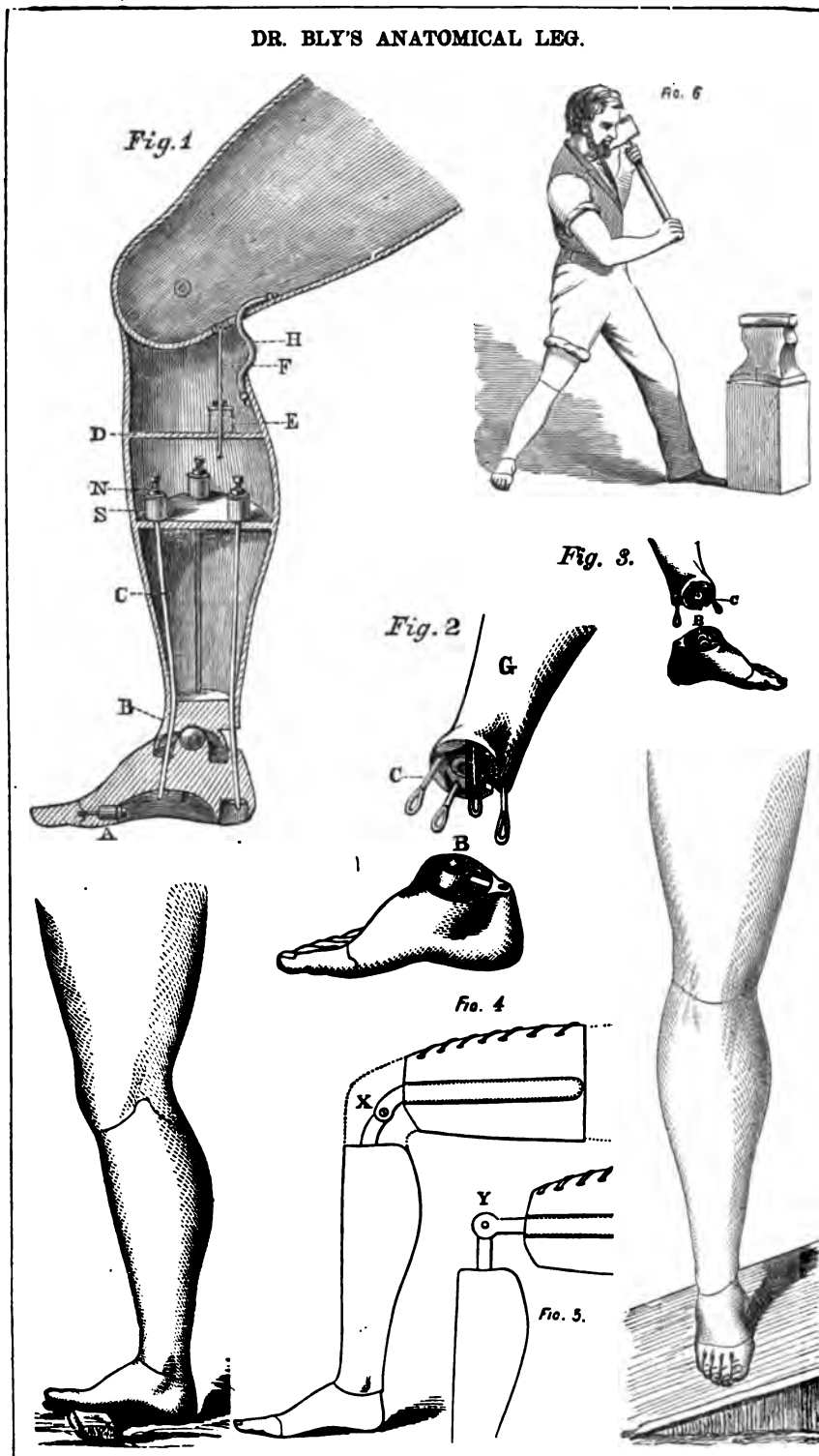
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We have just received from Stuttgart, Germany, a prospectus of an Encyclopedia of Surgery, about to be edited by Prof. Billroth of Vienna, and Luecke of Strassburg. This Encyclopedia, of which the publication is already begun, is to be all-comprehensive in its range, and to be a faithful exponent of the present advanced state of surgical science, as is obvious by a glance at its list of contributors, which includes among its number such names as Billroth of Vienna, Bruns of Tübingen, Cerny of Heidelberg, Esmarch of Kiel, Gerhardt of Würzburg, Heineke of Erlangen, Hildebrandt of Königsberg, Koenig of Göttingen, Luecke of Strassburg, Nussbaum of München, Schötenborn of Königsberg, Thiersch of Leipzig, Volkmann of Halle, Schultze of Jena, and many others of equal renown.

We have entertained the idea of preparing an English translation of this work and indeed have already made propositions for the publication of such an edition to one or two of the prominent medical book publishers in this country.

DR. BLY'S ANATOMICAL LEG.



THE MOST IMPORTANT PREPARATIONS OF MALT EVER MADE.

Possessing the superior advantages of fluidity, permanency and strength.

FOR PHYSICIANS' PRESCRIPTIONS.

(Old Maryland Brewery, Baltimore.)

Your attention is invited to the following list of Malt Preparations:

PURE EXTRACT OF MALT AND HOPS:

This elegant preparation is submitted to the medical profession as representing a result heretofore unattained in the manufacture of Malt Extracts, being a highly concentrated *Fluid Extract* of proper consistency for mixing promptly with water or milk, yet free from alcohol and not liable to ferment. We claim that it is richer in diastase and in the specific nutriment of Malt and Hops than any Extract in the market. Whenever used by physicians it has been pronounced a superior article and its effects most satisfactory.

To mothers nursing, with a deficiency of milk, it is of the greatest service, and as a vehicle for any preparation of Iron or Quinia it is unsurpassed. Retail Price, 75 Cents.

NIEMEYER'S EMULSION,

EXTRACT OF MALT AND COD LIVER OIL.

This preparation contains fifty per cent. of best Cod Liver Oil and the soluble Hypophosphites of Lime, Soda and Potash,—~~three~~ grains of the combined salts to the tablespoonful. We have evidences from the experience of physicians and others that it is one of the most easily assimilable and palatable forms of Cod Liver Oil yet introduced to the medical profession. It is a perfect Emulsion, mixing readily with water if desirable and is well fitted for administering to children and persons whose stomachs are too sensitive to retain the simple oil. Retail Price, 75 Cents.

EXTRACT OF MALT AND HOPS WITH HYPOPHOSPHITES.

Three grains to the tablespoonful in perfect solution. Retail Price, 75 Cents.

MALT, WINE AND IRON.

This combination consists of two parts Extract of Malt and Hops, one part pure imported Sherry Wine and four grains to the tablespoonful of Ammonia Citrate of Iron in solution. Retail Price, 75 Cents.

EXTRACT OF MALT WITH CITRATE OF IRON AND QUINIA.

Extract of Malt and four grains to the tablespoonful of the soluble CITRATE OF IRON AND QUINIA. Retail Price, 75 Cents.

SOLD BY DRUGGISTS THROUGHOUT THE COUNTRY.

**WM. R. WARNER & CO., Wholesale Agents,
PHILADELPHIA.**

INGLUVIN

Superior to Pepsin from the Hog, in all cases.

Dose and manner of administration the same.

Read the following certificate:

11 RUE NEUVE DES CAPUCINES.
PARIS, February 20th, 1879.

Editors North Carolina Medical Journal.

GENTLEMEN:—I cannot conclude this letter without saying a word in regard to a medicine which has recently been introduced into France by our enterprising countrymen, Messrs. Wm. R. Warner & Co., of Philadelphia. Among other specimens of their exhibit at the recent Exposition, their agent in Paris very kindly sent me several bottles of *Ingluvin*—prepared from the gizzard of the chicken,—with the request that I would give it a fair trial in the treatment of gastric irregularity and disturbance. I am pleased to be able to chronicle the fact, that, in three cases of pronounced atonic dyspepsia and in one case of chronic indigestion, it has acted like a charm—promptly relieving all disagreeable symptoms and restoring the stomach to its proper functions. My patients, who had previously tried without benefit all ordinary forms of pepsine, bismuth, cerium, nux vomica, etc., etc., are delighted with this new remedy and assure me that they experienced benefit from the first dose. Hereafter I shall prescribe it liberally and with great confidence in its therapeutic value.

Assuring you of my abiding interest in the success of the JOURNAL.

Very truly and respectfully yours,

EDWARD WARREN, (DET) M. D., C. M.

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JOHN REYNDERS & CO.,

(Late of OTTO & REYNDERS.)

303 Fourth Ave., New York,

MANUFACTURERS AND IMPORTERS OF

Surgical Instruments and Orthopædical Apparatus

OF SUPERIOR QUALITY AND WORKMANSHIP.

Collin's Improved Lamp for Illuminating



Cavities during examination, \$7; in case, \$9.

SOFT RUBBER BANDAGES,

Used in treatment of Diseases of the Skin, and as a Substitute for Elastic Stockings.

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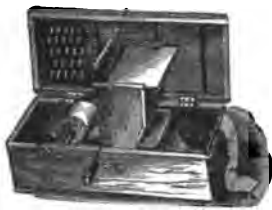
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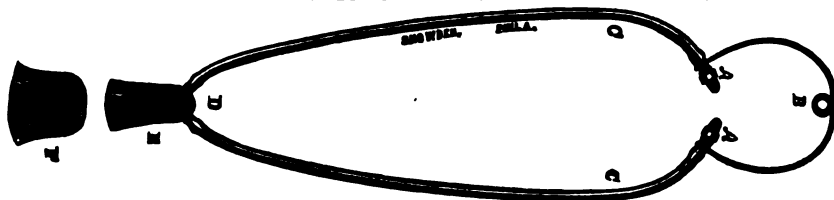
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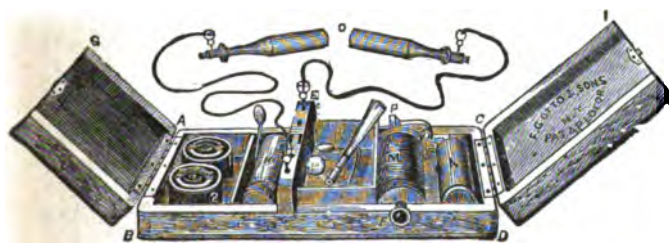
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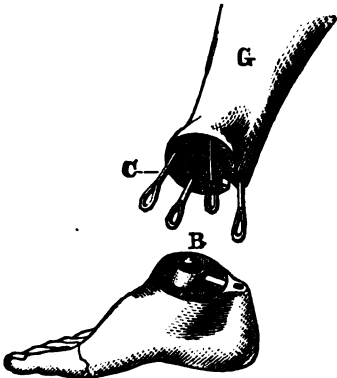
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A WEEKLY JOURNAL.

Entered at the Post Office at New York, N. Y., as second class matter.

Vol. I. No. 2.

New York, September 1st, 1880.

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A WEEKLY JOURNAL.

Vol. I. No. 2.

New York, September 1st, 1880.

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ON THE ANCIENT AND MODERN TREATMENT OF WOUNDS.

II.

As we have already seen in our historical sketch, general pathology and surgery were at a very early period occupied with the causes of inflammation, but we cannot have failed to observe that the results reached were insignificant, and by no means worthy of the importance of the subject. It is true, however, that not even in our day has the problem been thoroughly solved, and we cannot but admire the zeal exhibited and the labor expended to enlighten us. More and more clearly has it been demonstrated that inflammation is not something necessary or accidental, but that it deserves our interest as much if not more than the research for the causes of cholera or any one of the epidemic diseases.

It is a well known fact that the most severe lesions may heal accompanied by little or no inflammation if only the epidermis has remained intact. Based on this fact, Stromeyer instituted a method of operation,—that of subcutaneous tenotomy. When the question was raised, why subcutaneous wounds were so harmless and so little inclined to the inflammatory process, it seemed only too natural that the reply should have been: "atmospheric air is irritating and produces irritation." While the surgeons of former decades, however, were satisfied with simply the answer, those of the present century have been occupied in investigating its correctness, and therefore we find that even in our day the subject is still undergoing lively discussion.

Malgaigne performed subcutaneous tenotomy on animals, and then injected air into the track of the wound and its vicinity; wounds thus treated healed without inflammation or suppuration. "Why," inquires Hueter, "should a mixture of oxygen, nitrogen and a mere trace of carbonic acid excite inflammation, while neither of them exerts any injurious influence in the economy of our system?" It was further observed that in certain cases of comminuted fractures of the ribs air

enters the subcutaneous cellular tissue without producing inflammation. Is it true that the integument is very susceptible to the inflammatory process, and that the latter being once initiated by any extensive lesion spreads by contiguity to the surrounding structures? or might it be that there are certain irritants suspended in the atmosphere, (their number to be sure, being insignificant in a small bulk) so that a large quantum of air must necessarily come successively in contact with the wound before there is a sufficient accumulation of these germ irritants to excite the process? If the first is true, extensive contusions would be followed by more severe inflammation than mere incisions; but such is not the case, for beneath a contused integument union of a fracture may occur without any marked degree of inflammation, while an incision of only two lines in length communicating with the lesion of the bone frequently gives rise to suppuration of the entire wound, therefore it would seem that not the tegumentary lesion, *per se*, or its extent but the solution of its continuity is the important and essential factor, and apparently insignificant lesions may be followed at certain times and under certain circumstances by serious consequences.

All these well-known facts seemed to be at once explained when Tyndall discovered that the particles of dust in the atmospheric air were of organic origin, and when Pasteur found that microscopic organisms were present whenever putrefaction and fermentation take place, and also taught that these processes were the result of the presence of such organisms.

As is well known, Pasteur's theory has often been attacked; the question that arose was, if there were not other agencies in operation besides those mentioned.

Recognizing the fact that such low organisms are invariably present in the putrefactive process, and that bacteria exist in the blood of patients affected with puerperal fever and other traumatic diseases, Pasteur's germ theory was adopted in explanation of the latter, and grew into special favor when it was discovered

that specific bacteria were pathognomic of Anthrax and Typhus recurrens. Moreover, putrid matters having been injected into the veins of living animals, septicaemia resulted, and it was believed that the bacteria were the sole cause of the morbid processes.

We will not go into the details of the history of the germ theory, but only observe that one surgeon, Hueter, went so far as to declare that bacteria, or monades as he called them, were the direct agents in the production of disease, and nearly every inflammation of the integument and the mucous membranes was produced by the migration of these monades; also, that being contained in the products of inflammation, in the pus corpuscles, they were thence introduced into the circulation, infecting the whole system and giving rise to Pyaemia and traumatic diseases; he denies the existence of a specific poison in Pyaemia. Most surgeons, gynecologists and pathologists, (above all, Lister) believed that bacteria were introduced into the circulation through suppurating wounds, producing in mild cases a simple irritable fever, and in severe, septicaemia, pyaemia or puerperal fever.

We all remember how, a few years since, enthusiasm ran very high, and most diseases, internal and external, were attributed to the presence of bacteria, and there appeared numerous works written on their natural history and their relation to morbid processes. After the first enthusiasm had cooled down, the question arose, if the bacteria of putrefaction were the direct cause of both traumatic fever and the so-called *wound diseases*, or only of the former, and whether the latter were to be ascribed to specific bacteria? Landau found that the blood of patients with puerperal fever, septicaemia, and pyaemia did not undergo putrefaction; further that specific bacteria from the blood of patients with Typhus recurrens, Typhus abdominalis, and Variola did not incite putrefaction; he found no bacteria of putrefaction in the blood of living patients suffering with traumatic disease, and thinks it not improbable that the latter may be due to specific bacteria. The conclusions at which he arrived are as follows:

Bacteria of putrefaction decompose specific bacteria. This corresponds with Roser's observation that cadavers are a source of infection only at that time when putrefaction has not yet commenced, or far advanced, especially while a degree of animal heat still exists; in-

deed, it is known that the majority of infections in consequence of cadaveric poison occur among pathologists and surgeons and not regular anatomists who occupy themselves more exclusively with older subjects. Many interesting and valuable deductions might be drawn herefrom of interest to general hygiene.

After all that has been said on the subject, we are unacquainted with any single, isolated, simple, chemical body, or any specific ferment which can produce traumatic fever, the limit of our actual knowledge being that it may result in consequence of inoculation with putrid matters of a complex character; moreover, the researches of Billroth, (cocobacteria, Berlin, 1874) lead him to the following conclusion: "As yet we know of no morphological characteristic belonging to any form of micrococcus or bacteria, from which we can deduce its origin in any particular disease in or on the living human body; such a fact shows us the limit of our present knowledge of the subject."

So much for the question of the nature of bacteria and their relation to infectious and putrefactive processes; we wish only to add that some believe in the parasitic origin of septic diseases, while others say that bacteria are only accidentally present and are on the whole indifferent factors in the various infectious and simple inflammatory processes.

Lister's dressings do not, as is well known, protect the wound from the presence of bacteria in the pus, though their number was smallest when wadding saturated with glycerine had been applied immediately after washing the wound with alcohol, and Demarquay for this reason preferred such a dressing.

I know not whether it was the latter or who it was that first advocated the wadding dressing, but I made use of it myself as early as 1872, in St. Francis Hospital, New York, particularly after amputation of the mammae. In every case the result was excellent. We introduced no sutures at all or as few as possible in such cases, but applied a thick layer of wadding to the surface of the wound and left it there for one or two weeks, until it could be readily detached. By the use of such a dressing we secured union by the first intention, or when there existed a considerable deficiency of tissue, union beneath a scab.

I was not a little surprised when in 1875 Guerin proposed such a dressing as a new

idea and the latter was called after him; he recommends it especially in large amputations to prevent the entrance of infectious germs into the wound; among the advantages attending its use he mentions, less severe traumatic fever, comfort to the patient—particularly less pain—the formation of a healthy granulating surface covered with laudable pus, and finally, the avoidance of pyaemic infection and diminished mortality.

It might now be in order to enter into a comparison of Lister's method and the open wound treatment, but so much has been written, and the two methods have been so thoroughly discussed, that we may be allowed to pass them by in silence; however, concerning their relation to the germ theory we observe: If the latter embodied the exact truth how was it possible to secure such good results by the open wound treatment, and how could it be possible that notwithstanding the presence of bacteria beneath Lister's dressing we can secure union by the first intention?

Leaving aside all theories, and looking at results, we find that the open wound treatment gave better satisfaction than any previous known method; that, moreover, judging from statistics and our own experience in the treatment of certain compound fractures, puerperal fever and cases of ovariectomy according to the precautions prescribed by Lister, the latter's method far surpasses that of the open wound treatment; but now we come to a method which, wherever it can be applied, excels every other, open wound and Lister's included.

We have seen from our investigation of the subject thus far how much in both medicine and surgery has been gained when the means adopted for the treatment of disease were simplified, due regard being paid to all the indications present.

Whenever it can be applied we shall reduce inflammation, allay pain, and prevent septic complications by no plan of treatment more speedily and certainly than by *submersion of the parts in warm water*.

To Prof. Frank H. Hamilton of New York is specially due the merit of first recognizing and appreciating the value of the German method above indicated, (first brought to his notice by the writer of this article) and in his teachings and writings he has been untiring in his efforts to introduce and popularize it in American practice.

But before proceeding with the subject before us, a few words by way of digression concerning a certain class of injuries, principally of the hand and fingers, may not be out of place.

The patients are for the most part mechanics with families depending upon them for support, to whom the loss of even a finger or a portion of a finger is no trifling matter, and injuries of the character above indicated,—unfortunately too frequent, on account of the widespread use of machinery in the various modern industries,—are worthy of our most profound interest, the more so since it is in this field that we witness the greatest triumphs of conservative surgery; perhaps nowhere is the latter more indicated than when the smallest portion of a member is to be saved, and nothing is more contemptible than to sacrifice needlessly a phalanx, or even a portion of a phalanx, which might have been of the greatest usefulness if preserved.

Not only the loss of fingers or portion of fingers, but also contraction of the muscles, ankylosis of the joints, section and adhesion of the tendons, etc., may affect the usefulness of a hand or entirely disable it. Various are the injuries, and numerous the demands made on our judgment and skill. We only need to call to mind the difficulties of arresting the hemorrhage from certain arteries of the hand, the danger of destructive inflammation along the sheaths of the tendons, etc., to recognize that an intimate knowledge of anatomy, perseverance and close attention, and a judicious selection of the proper means in each individual case are required.

Let us suppose that a case of severe injury of the hand presents itself; there may exist a compound fracture, contusions, ecchymoses, laceration of the soft parts, open joints, luxation, torn sheaths of tendons, or laceration of the latter, etc., the question arises, how much must be amputated, and how much can we hope to save? Is it advisable to expose the patient to the danger of the absorption of septic matters, or of inflammation of the joints and tendonous sheaths in the uncertain hope of saving a finger, or it may be only a part of one? Or shall we amputate all those portions involved in the lesion, and thus substitute for it a simple wound, and also simplify our treatment? Shall we sacrifice a member which after all will be more or less disabled, to save the life of our patient?

“It would be comparatively easy to answer these questions, if we could foresee the extent of the sloughing process, but this is no easy matter. It may happen that parts which we surely expected to save, will slough away, and others that were saved only under great difficulties, will prove useless, and must finally be amputated. Much more frequently, however, are we surprised to discover how much has been preserved, and how greatly we are aided in this direction by nature.

The largest experience does not render our judgment infallible. We may do a great deal of mischief by primary amputation. The wonderful recuperative power manifested in injuries of the hand and fingers teach us, that we should desist, if possible, from primary amputation. The indications as to primary and secondary amputations are here quite different from those in cases of injuries of the arms or legs.

And it is just here that the value of the method above indicated becomes apparent. If we treat an injured part by immersion in warm water, the necessity of primary amputation is excluded; we may leave to nature the separation of the sloughing parts without endangering the life of the patient. The injured hand, for instance, is placed in the warm water, and we wait without anxiety until the wound has become thoroughly cleansed, until all gangrenous parts have become separated, and the line of demarcation completely established, and the temperature reduced to the normal standard, or nearly so; then, and not till then, we are prepared to examine what has been saved and how much of the same is worth preserving, and regulate our treatment accordingly, whether it be to operate at once, or to await, it may be, the result of an attempt at cicatrization or the exfoliation of a necrosed bone.

The result of such an expectant plan of treatment is, as a rule, favorable, in most cases primary union being secured. Experience teaches us that operations on parts which are more or less infiltrated with plastic lymph and have been the seat of inflammation, are generally well tolerated.

I have thus far mentioned only injuries of the hand and fingers, but have only done so in a relative sense, since the method of submersion is equally applicable in a vast variety of cases, and affords a most serviceable means of controlling

inflammation after injuries, and keeping the reaction within desirable boundaries. Without this means we are obliged to amputate or disarticulate in many cases, in which with it we can risk absolutely everything.

My experience of other methods of treatment has been limited, and others may secure equally favorable results from Lister's, but the complicated character of the latter making it impossible at all times and under all circumstances to find it at hand, as well as its expensiveness are objections that render the method of submersion more available in many cases.

It is in recent injuries that the latter is particularly commendable; where there exists suppuration and the osseous and muscular structures are infiltrated with pus, it is contra-indicated, since it produces swelling of the granulations and the soft parts generally, and pus being insoluble in water, is not discharged freely, so that the granulations become oedematous and flabby looking, with little tendency to cicatrization, and the pus is liable to undergo decomposition from its retention.

By permanent submersion we may limit the inflammatory process; the temperature of the water, say 80 to 90° F., though tolerably warm, is a few degrees lower than that of the blood, and we can secure better results than by cold applications. The part immersed is surrounded on all sides by a comparatively good conductor of heat, and the effect is at once obvious.

Wounds thus healed exhibit but little local and no constitutional reaction; serious and rapidly spreading phlegmonous inflammations do not occur; pure water is a well known disinfectant or antiseptic, and such seems to be its action in this case.

How long shall the treatment by submersion be continued? On an average from 6 to 8 days. By that time the process of granulation and plastic infiltration of the soft parts is so far advanced that the obstruction of the lymphatics prevents absorption of the poisonous secretions of the wound, if such danger still exists. The bath has accomplished its end, it has helped the patient over the danger of traumatic disease and it can do no more. The continuance of its use would unnecessarily retard the process of union.

FROM THE TRANSACTIONS OF THE GERMAN SOCIETY OF SURGEONS.

Ninth Congress, April 7th to 10th, 1880.
(Centralbl. f. Chir., 1880. 20.)

ESMARCH ON BLOODLESS OPERATIONS.

The advantages of the method recommended by the speaker seven years ago for performing bloodless operations are still disputed even by surgeons of high rank, on account of the parenchymatous hemorrhage which occurs after removal of the tube applied to arrest the circulation of the blood.

Since many of the modifications of Esmarch's method, suggested by various authorities to overcome this objection, are incapable of accomplishing the desired result, Esmarch considers it important that he should describe his present method of operation, by means of which all parenchymatous hemorrhage is entirely avoided, and he therefore gives us his mode of procedure in amputations, resections and operations for necrosis.

After amputation by the bloodless method, all the vessels are carefully ligated and the wound united by catgut sutures before the rubber tube is loosened. Absorbable drainage tubes are then introduced, a permanent compress bandage (Neuber's) is applied, the stump is elevated to a vertical position, and not until then is the rubber-coil removed; the patient having been replaced in bed, the stump is retained in the vertical position for half an hour longer.

In twelve amputations treated in this manner (nine of the leg), no secondary hemorrhage occurred, and in most of them the first dressings remained unchanged for 14 days, and even when then removed, the bandage was found to be stained with only a narrow, dry streak of blood, corresponding to the line of cicatrix.

In cases of resection, for the last two years he has been accustomed to close the wound by suture after ligating the few vessels requiring it; the limb is then laid upon a splint, and having been secured by a bandage, the whole is raised to a vertical position and kept there for half an hour. In 56 resections performed since 1878, neither did secondary hemorrhage nor a fatal termination occur in a single case.

In 148 operations performed for necroses in the old way, he was obliged in six of them to remove the bandage soon after on account of severe secondary hemorrhage, notwithstanding having used a tampon of wadding; also in some cases a

circumscribed gangrene of the integument occurred. Since Easter of 1879, Esmarch has discarded the use of a tampon to fill up the cavity of the wound, but instead, after careful disinfection and introduction of absorbable drainage tubes, the integument is united by suture; the permanent bandage is then applied and the rubber coil is removed. In twelve cases thus treated no secondary hemorrhage followed and the wound remained perfectly healthy,—indeed, in several cases complete primary union took place.

Finally, Esmarch secured equally favorable results by similar methods applied in other operations, as, for instance, in the removal of tumors from the extremities; on the other hand the absence of hemorrhage was less striking in operation about the shoulder and hip-joints.

König, of Göttingen, in his communication explains his modification of Esmarch's bloodless method. On the whole he proceeds in the same manner as the latter, although he makes use of no permanent dressing. He regards as an essential feature of the treatment the vertical elevation of the limb, (also applicable to the femur) and which he has kept up for 24 hours after the operation; this procedure is productive of but slight discomfort to the patient.

Waitz, of Hamburg, declares that the hot-water irrigations employed by the midwives are also of wonderful service in arresting the parenchymatous hemorrhage following the application of the bloodless method; the hemorrhage ceases promptly, while the tissues become almost bloodless. Trendelenburg, of Rostock, attempted to make use of Esmarch's method in operations in the region of the hip-joint. The first time he tried it, in a disarticulation of the femur, when, after resecting the head, he amputated the shaft high up, the constricting tube applied before undertaking the latter part of the operation slipped off simultaneously with the completion of the section, and great loss of blood was only avoided by rendering very prompt assistance. T., in a subsequent case transfixing the soft parts above the line of amputation with wooden pins, and the tube being applied above them a repetition of the accident was thus prevented. Esmarch in similar operations makes use of an apparatus with a pad invented by his assistant, Neuber, by means of which the femoral artery is compressed against the bone.

Schede, of Berlin, applied a spica band-

age made of elastic, and by means of the same pressed a rolled bandage against the femoral artery; by the use of such a compress he performed disarticulation of the femur twice without loss of blood.

Madelung remarks concerning the communication of Waitz, that the numerous experiments made in the clinic at Bonn, during the Summer of 1878, to arrest the parenchymatous hemorrhage occurring after the removal of Esmarch's constricting tube by means of hot water irrigations, utterly failed to secure the desired result; on the contrary, the hemorrhage, although it ceased for the time being, a few moments after the discontinuance of the hot water application became more profuse than before. Harlstein, in a dissertation, has given a report of the effect of hot water irrigations in carefully performed experiments on animals.

GLUCK, OF BERLIN, ON NEUROPLASTY WITH RE-ESTABLISHMENT OF FUNCTION.

It has already been proven by numerous experiments on animals, that plastic operations on the large nerve trunks can be successfully performed; from two nerves lying parallel to each other filaments have been separated and united in the manner of an anastomosis; also after total section of nerve trunks, the latter have been re-united crosswise. The neuroplastic operation of Gluck is new. G. cut from the sciatic nerve of a fowl a portion about 2 cm. in length, and another somewhat longer from the sciatic of a rabbit, and by means of catgut united the latter portion in such a manner as to replace that taken from the sciatic of the fowl. On the eleventh day the superficial wound, which had united by first intention, was reopened, and perfect union of the transplanted portion of nerve was found. Irritation of the trunk above the point of operation produced twitching of the muscles supplied by it, proving that the conducting power through the inserted portion had been re-established. G. performed successively similar operations upon a large number of animals, and the result was the same, whether those furnishing and those receiving the portions of nerve were of the same species or not,—indeed the union took place even when the transplanted portion was placed in an inverted manner, *i.e.*, so that the normally central extremity became peripheral. A condition of success is union of the nerve by first intention, so that the newly formed intermediate cicatrix has a

diameter of not more than a millimetre; if suppuration occurs, the extremities of the original nerve become clubshaped, and the portion introduced becomes necrobiotic. G. then exhibited a number of preparations of nerves united, some of them by first intention, and some of them by supuration.

To ascertain whether the conductile power of the same has been re-established, it is only necessary to irritate the trunk with the pincers above the point of operation; if the latter has been successful, twitching of the muscles supplied will result. Sometimes the nerve will respond to mechanical stimulants, when it will not to the electric current; G. explains this by the fact that all the nerve filaments do not become united simultaneously (as can be proven by microscopic examination), and that therefore only a limited number of them respond to the electric stimulant, while the application of the pincers affects the nerve in its entire diameter. As early as 80 hours after operation, the first evidences of conductivity can be discovered,—complete re-establishment of function, however, does not follow until much later.

Finally S. exhibited some fowls upon which he had operated in the manner above described, 26 days before; they still limped noticeably, but he expressed the hope that a successful result might yet be established by degrees.

KOENIG, OF GOETTINGEN, CASE OF OSTEOTOMY OF BOTH TIBIAE FOR GENU VALGUM.

K. is of the opinion that even severe cases of Genu Valgum may be left without operation and subjected to orthopaedic treatment provided there are no severe functional derangements present; the latter, which are a serious impediment to the gait, occur when there exist a high degree of splayfoot, and in such cases operative correction of the deformity may be indicated. K., however, does not adopt Ogston's operation of resection of the internal condyle, against which he brings forward very weighty objections, but removes a wedge-shaped portion of bone from the tibia just below the joint; such was the method adopted in the case of a patient whom he presented, who had suffered from genua valga and flat foot. Jan. 28th, 1880, a wedge of bone was removed from each tibia at one sitting; the wound united without complications, and eight weeks after the operation patient began to walk, at the same time the improvement in the

splayed condition of the foot was very marked. K. does not make a transverse incision, but a longitudinal one along the crest of the tibia, and from the centre of this and at a right angle to it, a short one extending across the anterior surface of the bone; the triangular flaps thus formed are then raised and a wedge removed with the chisel, involving the whole diameter of the bone. The fibula, K. does not disturb, but makes a counter-opening for the purpose of drainage near the apex of the wedge.

Czerny concurs fully in the view of K., and reports two cases of merely linear chiseling of the femur.

Von Langenbeck pronounces the same objections as K. against Ogston's operation, based on the experience of Thiersch reported before the last congress of surgeons; he fears the occurrence of inflammation upon recommencing the use of the joint. In cases of children especially, has v. L. always secured satisfactory results by adopting the bloodless method of orthopaedic treatment.

Kolaczek speaks in terms of praise of the good functional results of Ogston's operation. In the clinic of Breslau there have been about twenty cases treated by this method, which recovered without febrile complications.

Graefe reports a case from the clinic of Leipzig, in which recovery and tolerably perfect re-establishment of function took place in eight weeks; there was complete mobility of the joint with absence of all shortening.

Sonnenburg mentions a case from the Strassburg clinic, in which after Ogston's operation suppurative inflammation of the joint ensued; it is true, recovery took place, but the joint remained ankylosed. In another case only a limited degree of mobility was possible.

Schönborn saw also suppurative inflammation of both knees after Ogston's operation.

VOGT, OF GRIEFSWALD, ON THE TREATMENT OF FOREIGN GROWTHS BY THE IMBIBITION OF WICKERSHEIMER'S SOLUTION.

V. after having experimented on animals, selected malignant tumors, which were no longer removable by operation. In order to avoid the toxic effects of the arsenic (which, however, did not make their appearance in his experiments on animals), he never used more than two grains of the solution in twenty-four hours, the amount of arsenic contained in this quantity not exceeding the maximum

dose per day. The absorption of the fluid was secured partly by the application of the same with a brush or by means of strips of lint saturated with it (in ulcerating carcinoma), partly by means of parenchymatous injections into the morbid mass, as well as its base and the surrounding structures, with a $\frac{1}{2}$ —1 Pravaz syringe, and sometimes, according to the method recommended by Dohr, by the use of threads drawn through the tumor, which were first disinfected and then carefully saturated with the solution, and from time to time re-moistened with the same.

V., in view of his experience, believes himself justified in recommending a further trial of Wickersheimer's solution in the various forms and stages of foreign growths, as its application in a proper manner and in a carefully regulated quantity, undoubtedly has the effect to retard their growth and hold them in *status quo*, to arrest the process of ulceration, to limit proliferation and to eventually prevent the implication of new structures.

LAPTSCHINSKY ON THE QUESTION OF THE RESUSCITATION OF FROZEN ANIMALS.

(Wratsch, Polish Nos. 5-7, Centralbl. f. Chirur., 1880, 15.)

Regarding the subject of the resuscitation of frozen animals, as well as human beings, striking indeed must appear the contradictions existing among experimentors and clinical surgeons; while the latter almost without exception advocate the gradual introduction of heat, the former (Beck, Horwat, Jacoby) claim that it should be applied rapidly. In order to decide this question, Laptschinski has performed careful experiments on dogs in the clinic of Prof. Manassem, and recorded the results of his observations.

He selected for each of his twenty experiments three dogs of the same species, age and height; after freezing, one of the animals was immediately warmed in a bath at a temperature of 37° R., the second in a room heated to 22—24° R., and the third in a cold room of 0° R., and directly afterward, according to the symptoms of returning animation, and the increase of rectal temperature, introduced into a warmer atmosphere. In all three cases frictions with brushes and coarse cloths were made, and both during and after the experiment specimens of blood for the purpose of microscopic examination were secured, and portions of muscles taken from those that

died, for the same purpose. As freezing agents L. made use at first of cold air (-17°C.), afterward of freezing mixtures of -13 — 15°C. , in which he packed the animals, and during the process repeated observations of the temperature in the cleansed rectum were recorded, in regard to the minute details of which we must refer the reader to the original. As to the intensity of cold produced we may distinguish three classes of experiments: First, a reduction of the temperature until there was a complete cessation of respiration, and by auscultation the heart's action could be only feebly recognized; Second, until there remained a scarcely perceptible superficial respiration and distinctly audible heart sounds; Third, until respiration and the heart's action were still well marked.

The conclusions at which he arrived are as follows:

1) The rapidity with which the reduction of temperature takes place, varies in different animals of the same size, weight and temperature, notwithstanding the identity of the freezing medium; it is obvious, according to L., that individual peculiarities,—the varying irritability of the nervous system, the difference in the capacity of the tissues for the generation of heat, as well as a variation in their qualities as conductors, are important factors.

2) Dogs, after a definite reduction of the rectal temperature, are most quickly resuscitated by exposure to a high degree of heat, the best means being a hot water bath.

3) Even in those instances in which the greatest reduction had been endured and when slow and gradual exposure to heat was absolutely fruitless, its rapid application by means of the hot bath proved effectual in saving the life of the animal.

4) Dogs that had been resuscitated by the rapid method just indicated were less liable to febrile attacks afterwards than those which had been subjected to the more gradual method.

5) A record of their weight taken after recovery made it appear very probable that dogs warmed at once by the hot bath lost less in weight and recovered more promptly than those exposed to the temperature of a cold room.

6) The blood corpuscles of the specimens taken from the animal during the process of freezing assumed the most varying shapes, many of them being perfectly

colorless. The blood plasma presented in many instances a yellowish-red color, obviously the result of a loss of haematin by the blood corpuscles. Blood collected during the process of resuscitation exhibited under the microscope the same conditions though in a much less marked degree; in animals that perished, even when there was not so great a reduction of the rectal temperature, frequently no blood changes were discoverable.

7) A microscopic examination of the striped muscles showed a sort of clouded appearance of some of the muscular fibres throughout their whole length; others had almost lost their transverse striae, although retaining their longitudinal, and still others had lost both; finally, there were some that presented a swollen appearance, somewhat resembling a string of beads, and upon these both the transverse and longitudinal striae were but faintly visible. The changes indicated were only observed in those fibres situated on the periphery of the muscle,—those situated more deeply had undergone no change. The sarcolemma presented in some parts a division of its nuclei so that cells were visible containing two or three of the latter. During the gradual exposure to heat in a cold room it was further observed that in spite of all attempts at resuscitation the temperature in the rectum fell 2 to 3 degrees lower, so at a temperature of 18 to 19°C. the death of the animal could be predicted with certainty when subjected to this method. This phenomenon is attributed by L. to the fact that the animal continues to be exposed to a still further reduction of temperature, since, excepting a relatively small portion of the body, the cold continues to act upon all other parts, and the influence of the frictions is insignificant in comparison with that fact; however, Wertheimer has demonstrated by his experiments that a temperature below 18°C. is incompatible with the recovery of the animal.

On the other hand, if an animal with a rectal temperature of 18 to 19°C. was at once placed in a hot bath it was surprising with what rapidity all the functions were re-established, due, as L. believes, to a rapid general warming of the blood, since warm blood is one of the best heart stimulants (Tarchanow, Lyons), and he did not find hyperaemia but anaemia of the brain in those animals which perished; the function of reflex action is also quickly restored by the hot bath, its re-establish-

ment being undoubtedly greatly promoted by the action of heat (Tarchanow).

In confirmation of these views it is to be noted that of the 20 animals treated by the method of gradual resuscitation in a cold room, 14 died; of the 20 introduced at once into a warm apartment, 8 perished, while of the 20 placed immediately in a hot bath all recovered.

SCHINZINGER ON DISLOCATION OF THE FEMUR.

(Wiener Med. Presse, 1880, 3. Centralbl. f. Chir. 1880, 2.)

Sch. reports four cases of dislocation of the femur, treated by him during the year 1879, among which there was one of double dislocation of unusual interest, consisting on the right side of a luxatio ischiadica, and on the left of a luxatio suprapubica. In surgical literature, Sch. finds but one other case of double dislocation mentioned, viz.: in Hamilton's work on Fractures and Dislocations (translated into German by the editor of the INTERNATIONAL SURGICAL RECORD, who wishes to state here that it affords him great pleasure to find that the above work of his esteemed friend, Dr. F. H. Hamilton, is highly appreciated by German scholars, and frequently quoted in German literature).

Schinzinger's patient had been buried beneath a mass of falling earth, and his comrades had succeeded in liberating him by pulling with great force on his left leg, while the pelvis was fixed by the earth with which he was covered.

Next to this case, Sch. reports the result of a post-mortem examination of a recent luxatio femoris obturatoria, which he had reduced only the day before the patient's death, the latter resulting from other internal injuries. At the autopsy the head of the femur could readily be relaxed through a rent twelve inches in length, on the inferior and inner side of the capsule, this rent extending as far as the insertion of the capsule on the anterior surface of the femur. The ligamentum teres was torn off; the pectineus and obturator ext. were partly crushed, and infiltrated with blood, and the cartilaginous surface of the head of the femur was of a brownish color, though otherwise intact.

Dr. Urlichs, of Würzburg, also reports that in the Surgical Clinic of Würzburg he had not long since an opportunity of making an anatomical examination of a recent dislocation of the femur. A railroad employé, sixty-four years of age,

had been run over by a train, and besides having had his left leg crushed, and sustained other injuries, had received a dislocation of the right femur upon the dorsum of the ileum, which was reduced by Dr. Riedinger a few hours after the accident; at the same time Dr. R. amputated the left thigh. The patient died two days later, and the autopsy revealed the following condition of the right ilio-femoral articulation: The ligamentum teres was torn through, and there was a rent in the posterior aspect of the capsule; on the anterior surface of the head of the femur the cartilage was detached in an irregular manner over a surface about the size of a half-dollar; from the posterior of the rim of the acetabulum a fragment of bone, 1.5 cm. in length and 1 cm. in width, had been completely detached, and was floating free in the joint. No haemarthrosis had occurred.

Referring to an article in our first number on Dr. Gruening's magnet for the removal of particles of steel or iron from the vitreous chamber, we wish to give the following case, extracted from a letter of Fabricius to his friend Hagenbach, dated Bern, April 25th, 1624.

A peasant from the valley of St. Mie, near the lake of Biel, was purchasing steel at a store, and while testing its quality a particle struck the cornea near its margin, where it remained immovably imbedded, causing severe pain. After several days, having sought every available assistance, but without being able to receive relief, and the inflammation and pain becoming intense, he came to Berne and applied to Fabricius, who attempted repeatedly to remove the particle by means of instruments, but failed.

Translated literally the letter reads thus: "Just here my wife thought of the proper remedy. While I held open the eyelids with both hands, she held a magnet as near the patient's eye as he could bear; after repeating this operation several times, for he could not tolerate the necessary degree of light for any great length of time, suddenly we saw the particle of steel fly towards the magnet, and cling to it; after that the cure was completed by the use of a soothing eyesalve."

The use of the magnet for the purpose of finding and extracting metallic foreign bodies, was probably first recommended in cases of arrow points and bullets; however, the ideas entertained on the subject were undoubtedly vague, for we find it

recorded that Paracelsus applied plasters containing magnetic properties, "which attracted the bullet."

The case cited by Fabricius is of quite a different character, and assumes greater interest when we recollect that it was the wife of that eminent man who suggested the idea of using the magnet; this remarkable woman, Maria Colinetea, excelled both in midwifery and surgery. She was highly esteemed by the great men of her times, and whenever her husband was away on professional journeys, as frequently happened, the greater part of his practice was left in her skilful hands.

Fabricius was proud of his wife's talents, and calls the treatment with the magnet a "curatio ingeniosissima."

B. VON LANGENBECK. EXTIRPATION OF THE PHARYNX.

(Paper read on the first day of the meeting of the Eighth Congress of the German Society of Surgeons at Berlin, April 16, 1879. *Archiv f. Clin. Chir.* 1879, Bd. XXIV., Hft. 4. *Centralbl. f. Chir.*, 1880, 7.)

Cancer of the Pharynx is of rare occurrence. The cases in which only one lateral wall is affected, are characterized by a dislocation of the larynx to the opposite side, and prominence of the upper region of the neck on the side affected. If the disease has its origin in the anterior or posterior wall, we find the larynx pushed forward, sometimes so far as to form a plane with the walls of the thorax. The voice is indistinct, deglutition is more or less difficult, but the respiration is unobstructed, except when the disease has extended to the larynx; probably at an early period the large vessels of the neck become adherent and the neighboring lymphatic gland infiltrated with the morbid material. By proceeding through the mouth, or by Pharyngotomia subhyoidea, partial extirpation may be accomplished, but the removal of exten-

sive degenerations by these methods cannot be undertaken.

Von Langebeck having first performed tracheotomy, makes a longitudinal incision, extending from the margin of the horizontal portion of the inferior maxillary bone, commencing at a point midway between the symphysis and the angle, downward across the greater corner of the hyoid bone as far as the cricoid cartilage or even below the latter if necessary. After dividing the sup. cervical fascia and the Platysma and Omohyoid muscles he continues the dissection deeply on the level with the hyoid bone, ligating and then dividing the lingual and thyroid arteries and facial vein; he also cuts both branches of the sup. laryngeal nerve. Having detached the tendons of the anterior belly of the Degastric and of the Stylo-hyoid muscles from the os hyoides, he finally opens the pharynx. The latter being attached on all sides by loose connective tissue, to facilitate its removal the larynx is drawn to the opposite side and turned on its axis; the disengagement of the anterior and the lateral walls is accomplished through the incision already described,—of the posterior wall by making a transverse section of it on the level with the inferior margin of the velum palati, and then freeing it from its attachment to the vertebral column by means of the raspatorium and the knife.

All three cases operated on by v. Langebeck, (two males, aged resp. 48 and 78 years, and a female aged 52) died a few days after the operation from gelpneumonia; in each of them a portion of the larynx was included in the operation. The pneumonia was probably due to the section of the sup. laryngeal nerve.

We wish to ask the profession to favor us with communications as to their experience in the use of Sulphide of Calcium in Diabetes, first recommended by Dr. Sidney Ringer in the latter disease.

DR. A. ROSE,
Tarrytown, N. Y.

THE International Surgical Record

A WEEKLY JOURNAL.

ACHILLES ROSE, M.D., Editor.

E. J. SCHMITZ, Business Manager.

Office, No. 1 Chambers Street, N. Y.

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CONGRATULATORY.

It is a common experience that a new enterprise having for its foundation a novel idea is generally regarded with suspicion, and meets with many doubts, prejudices, opposing influences, and obstacles of a varied character. The fact is a universal one, and history the world over furnishes us with numerous illustrations of its reality; indeed, rarely do we find that any undertaking of a really lasting and widespread influence, having for its object the benefit of a common humanity has ever accomplished its mission without first passing through this initiatory stage—this baptism of fire.

To this rule we could not fairly hope to be an exception, but we are happy to announce that our experience has been a totally unexpected one. Wherever our journal has gone it has met with a most cordial reception, and many of the most eminent members of the profession have signified their approval of its aim, while nowhere has it met with discouragement.

In appearing with this our second number we take this opportunity to appeal to the profession to lend us their assistance, in the common interest of our science, by communicating through our columns their personal experience on those subjects treated in our translations, realizing that the influence and value of our journal will depend in a large degree upon their response to this our earnest invitation.

As to the Trade Department of the International Surgical Record we have not concealed from ourselves the fact that it will be more difficult to render general satisfaction until we are established upon a firm basis, and by demonstrating the value of our medium, have secured the co-operation of those interested, viz: inventors, manufacturers and importers of surgical apparatus and appliances. As we already intimated in our first issue of this department, we hoped thereby to indicate our plan and aim, neither the time nor the material being at our command to

make it as perfect as we desired; begging the indulgence of our readers we shall spare no pains to multiply our attractions and enlarge the field of our usefulness with every succeeding number. A primary object of our Trade Department shall be, in reference to inventors of appliances already known and tested by long experience and the benefactors of mankind generally, to render honor to whom honor is due.

Finally, we feel under obligations to express our thanks to those who have given us their encouragement and promised to favor us with their contributions and general aid and support.

In order to have our articles complete and to render the RECORD as perfect as possible, considering the peculiarly difficult circumstances attending its preparation, we have sent out our first number, dated July 1, 1880, in advance; after the present date there will be no interruption in the regular weekly issue.

THREE-HANDED CHISELING.

PROF. W. ROSER, of Marburg.

(Archiv f. Chirurgie, Bd. XXI, pp. 145 etc.)

For many years I have been accustomed to using the chisel in a variety of operations in such a manner as to only hold and guide it while the striking is done by an assistant. This method offers many advantages; it permits of such certainty, precision, and rapidity of operation as cannot be secured in any other way; the direction of the instrument can be much better watched by the eye, and its progress much more readily controlled by the finger when the chiseling is performed with three hands than when the ordinary two-handed method is adopted. If the operator strikes the chisel himself, his attention is divided—he cannot, as he should, keep his eye fixed at the same instant on the edge of the instrument and on the end that is to be struck by the hammer; in many cases this is absolutely impossible, since the two points are too widely separated in the field of vision. Thus there is always a degree of uncertainty present; if he looks at the edge he may strike his fingers,—if he directs his attention to the handle he cannot control the action of the instrument upon the bone with sufficient accuracy; moreover, with the general management of the chisel, laying it aside in order to examine the progress of the operation, etc., a relatively large amount of time is lost.

But the greatest practical value of the three-handed chiseling is illustrated in those cases where we are obliged to operate more or less blindly,—that is to say, where the chisel must be used in deeply seated operations, by imperfect light, or it may be without the aid of vision, and solely under the guidance of the finger,—in such cases this method is of inestimable worth. Whoever has frequently operated for necrosis, must have seen many fit cases for its adoption. If a sequestrum imprisoned by an involucrum is to be removed from the knee-joint or perhaps from the deeply seated medullary canal of the femur, three-handed chiseling very much facilitates the operation; the left hand of the operator can at the same time push aside the soft parts, and control the action of the instrument, while with the right he holds and guides it. The assistant can handle the hammer with one hand and the sponge with the other, or make use of the dressing forceps to remove the fragments of bone produced by the chisel,—the operation is thus carried forward with greater regularity, and without interruption. In many cases it is also desirable to divide a sequestrum, either to split lengthwise one of a broad semi-cylindrical form, or separate in two or more parts one of a long, slim character; by adopting this method of operation, the incisions into the soft parts may be more limited, and much time can be saved; the deeply situated and imprisoned necroses of the femur require for their removal so much time under any circumstances, that we have every reason to welcome any abbreviation of the procedure.

In the removal by the chisel of fragments in fractures of the cranial bones, the three-handed method is of special value, since in such cases the utmost precision and caution are necessary; on account of the indurated meninges we must proceed with great care and the instrument must be made to penetrate slowly and obliquely, the eye of the operator not losing sight of its cutting edge. If the operation be undertaken at night, this method is so much more advantageous, since by artificial light, a shadow produced by handling the mallet, may much more readily obscure the work of the operator.

If the alveolar margin of the inferior maxilla is to be removed, it can be accomplished very rapidly and safely by fixing the bone with the fingers of the left hand, at the same time holding back

the lip or cheek and applying the chisel along the fingers; if on section of the bone its structure still looks suspicious and a further exsection seems necessary, we may with the greatest ease remove another, deeper layer.

Compared with the large sections made by the saw the chisel possesses this advantage, that by the gradual removal of successive portions with the latter one can judge better how far it may be necessary to carry the operation. First a small fragment is exsected—a wedge, a prominence, the half of a bone—and in this manner room is gained for extending the operation, and only small incisions of the soft parts being required, extensive injuries to muscles or detachment of them in order to complete the exsection are avoided. It is true, a specimen of pathological interest may thus be frequently destroyed, but such a consideration is of no weight when the important question of life or death is involved. Whenever the use of the chisel is indicated the question to be decided in that particular case is, whether the three-handed method will afford any essential advantage, but it is to be remembered that if this mode of procedure is kept in mind it will extend the range of application of this instrument. Many joint resections will be facilitated and simplified if the chisel can be employed, and the three-handed method permits of deeply seated operations at the cost of comparatively slight disturbance of the soft parts and with limited incisions. These advantages may be utilized in joint excisions, of which some cases in point are here enumerated:

1) Ankylosis of the ankle-joint with the astragalus, (particularly when complicated by marked deformity, for example club-foot or pes equinus, old fistulae, etc., so that the patient is compelled to use crutches). In such cases operation by means of the saw is almost impossible, but with the chisel comparatively easy. First, both malleoli are removed with the instrument, and then as much of the articular surfaces as appears necessary in order to secure a good position and favorable result; if we desire to make a mere horizontal section of the bone a straight narrow saw may also be used.

2) In the early part of the present winter a case of old luxation of the forearm presented itself at my clinic. The arm was rigidly extended, the dislocated humerus with its trochlear surface turned forward and inward, formed a marked pro-

trusion beneath the integument, indeed so great was the displacement that its lower extremity after fracture of the internal condyle had worked its way forward until it now stood in front of the points of origin of the flexors of the forearm. The obvious indication was to resect this portion of the bone and thus restore the power of flexion. The articular surface of the inferior extremity of the humerus in this case could be removed by the three-handed method of chiseling without the necessity of incising anything except the integument over the trochlea and the remains of the capsule. First, the protruding half of the trochlea was removed with the chisel, then the remaining portion, and finally the rotula. This done, the arm could now be flexed, and by the aid of antiseptic treatment recovery followed as promptly as could be expected without any marked febrile symptoms.

3) But it is in operations on the hip-joint that the three-handed method of chiseling is perhaps most valuable. Many a time I have succeeded in excising the head of the femur by means of the chisel through a comparatively very small incision, indeed a case in point is that of a young man, 19 years of age, only recently operated upon, in which the femoral head presented but very little mobility and was hence proportionally difficult of removal. An incision through the tensor vaginæ femoris and sartorius as well as the fore part of the gluteus medeus exposed the head of the femur which had buried itself above in the rim of the acetabulum; a number of strokes with the chisel (three-handed) guided by the index finger introduced deeply beneath the surface, divided the head in two, and thus the excision of the diseased portion could be accomplished through an incision of only one-third the extent of that generally adopted in such cases.

4) In orthopedic osteotomies which are practiced so much at present, the method we are advocating is also to be highly recommended. In such cases particularly, much stress is laid upon the desirability of limiting as much as possible the incision of the integument and the soft parts, and the exposure of the bone. With an incision only large enough to permit the introduction of the finger and the chisel guided by it, the excision can be performed with ease and precision. As long as twenty years ago I divided the fibula thus with the chisel, and the wound

united as in a subcutaneous fracture, by first intention.

The chisel to be used in the three-handed method should be long, and provided with a thick button. The former is necessary in order that it may be readily grasped and guided, and that the assistant may more easily handle it; there is also less obstruction to the light and fewer shadows are produced if it is of some length. The thick button on the end makes it easier for the assistant to apply the hammer, and since the instrument must be struck from almost every conceivable point, this is no insignificant consideration. The spherical shaped button possesses also another very practical advantage, viz: one can readily make use of a chisel of this pattern as an elevator or raspatorium. In the various resections and operations for necrosis it is sometimes required to detach and push aside the periosteum and soft parts, and for this object such a chisel is a most convenient instrument; moreover, as a lever for the removal of separated or partially separated fragments it is also of value. The latter necessity frequently presents itself in many such operations with the chisel, and it is at all events desirable to have at hand an instrument that can be used for that purpose.

REVIEWS AND BOOK NOTICES.

E. GURLT, Die Gelenkresectionen nach Schussverletzungen, ihre Geschichte, Statistik, Endresultate. Mit 26 Holzschnitten. Berlin. Verlag von Hirschwald, 1879. 1333 Seiten 8vo. (Resection of Joints after Gunshot Wounds, their History, Statistics and Final Results, with 26 wood-cuts.)

In this volume of Gurlt we have before us the result of the most thorough and exhaustive compilation. We can readily form an idea of the difficulties attending such a work, when we consider how arduous must have been the labor expended in collecting the material for an authentic history of the thousands of cases enumerated in the 1333 pages of this volume. The author has not satisfied himself with simply giving us the results of the joint resections performed upon the wounded German soldiers during the last war, though such was the limit which he prescribed himself at the commencement of his undertaking, as he informs us in his preface, but has gone back to the era of the first systematic performance of joint resections, the history of which in-

cluding those occurring in civil practice he sketches in the most illustrative manner in the introduction to his work, reviewing the whole literature of the subject.

In this volume the merits of Charles White, Antony White, Bend, Orred, Park, Morreau, Percy and others are duly recognized. The history of military resections commences with the French Revolution of 1792, and is continued through the wars of the First Empire, the Greek War of Independence, the Russo-Turkish War, the Belgian Revolution, the Conquest of Algiers, the War in the Caucasus down to the most recent conflicts, whose surgical literature is generally known to the present generation of surgeons. But even in the portion devoted to the present era, Gurlt has not confined himself to the reproduction of existing literature, but by means of a voluminous correspondence, particularly among German surgeons, has collected the facts in regard to methods of operation and the final results down to most recent date; such a course has enabled him to present a searching criticism of heretofore published reports, and enhance their value.

That the Franco-German war of "70-71" should occupy an unusually large space, is to be expected, but even here the author has succeeded by means of more recent investigations, in removing and completing the semi-official report of tabulated groups of resections which have appeared in the *Deutschen Militär-ärztlichen Zeitschrift*. But not even the most insignificant war has escaped his notice, so that we find a precise history of the resections made in Cochinchina, New Zealand, Mexico, and Dalmatia as well as during the Ashantee and the late Turco-Servian and Russo-Turkish wars. Had his work been delayed a few months, undoubtedly it would have also contained the resections of the Austrian invasion of Bosnia, and the Zulu War.

Gurlt's work, so far as military resections are concerned, may justly take rank with the elaborate and well-known volume issued from the Surgeon General's office at Washington on the American War of Secession, and it is so much more worthy of admiration, since it owes its existence to the energy of a single author. Our army medical authorities have placed the material of their offices at Gurlt's disposal, and it is greatly to be desired that he should undertake the elaboration of these materials in other departments of surgical science, so that keeping in view

the lesson taught us by the terribly destructive wars of modern times, the life saving teachings of science might also in our country secure universal promotion.

Compared with the official like history of military resections which occupies the first 1204 pages of the volume, the remaining two sections, comprising their statistics and final results, are comparatively brief, though embracing the real scientific sum total; this brevity, however, will appear sufficiently justified when we recollect the difficulty in times of peace of prescribing precise rules for military surgery. We have introduced into civil practice the aseptic and antiseptic methods of operation and treatment and of late years considerably improved them. We have been convinced that many of the teachings of the past which we regarded as infallible were not only becoming untenable but in several instances we have actually been obliged to abandon them for new ones; indeed, our civil practice has been revolutionized within a few years, and that in future wars such will be the case in military surgery no one can doubt. The subject of resection cannot fail to feel the influence of such a result, and while this volume of Gurlt affords us much to respect, let us also turn our eyes to the future and ask ourselves the question: from the standpoint of modern surgical views, what position will resections in military practice occupy?

The author has by no means avoided this question, but expresses himself in the following brief sentences:

"It is certainly difficult to discuss what is as yet only conjectural, and in view of the few trials made by surgeons during the last Russo-Turkish war, as to the value of the aseptic method,—trials that partly failed on account of surrounding difficulties, at any rate furnish no decisive results,—the whole question still remains an open one."

The brief concluding section of Gurlt's work merits special consideration. In it we find analyzed 652 cases of resection, 213 of the shoulder-joint, 355 of the elbow, 16 of the wrist, 4 of the hip, 9 of the knee, and 55 of the ankle; it is to be regretted that the good results in regard to re-establishment of function are markedly outweighed by those that are unfavorable (37.81% were favorable, 63.10% unfavorable). The causes in each case of this collection are carefully considered, and the statistics tabulated.

The result of Gurlt's labors will always

prove of inestimable value to the history of the surgery of our day, but we venture to express the hope that as a consequence of the unsatisfactory character of the results reached we shall not deny the value of resection in military practice, but rather be stimulated to more active exertion to secure better results; this elaborate volume of Gurlt revives a new impetus in this direction, and our science must remain his debtor for his pains-taking labors.

We should like to see this great work translated into English, indeed it would

be a misfortune should it not become known to every military surgeon. In 1876 the writer published in the *Medical Record* a paper on Superiosteal Resection of the Ankle-joint, giving together with a case of his own a brief general history of the operation, describing the most remarkable cases enumerated by Langenbeck. Subperiosteal resections do not seem to be as highly appreciated in this country as in Europe, though they certainly deserve to be.

International Trade Department.

THE ARTIFICIAL LEG OF DR. B. F. PALMER, 1535 Chestnut St., Philadelphia.

The leading peculiarity of this invention is in the device called the *safety-socket*. Dr. Palmer first demonstrated the theory that the true principle of support in an artificial limb is, in the majority of cases, to receive the weight of the wearer *upon the end of the stump*, though as is well known to all surgeons, the idea was generally entertained that the latter should be relieved from all pressure and carefully guarded from contact with any portion of the socket of the artificial limb, in strange contrast with the generally adopted rule in amputations, to avoid having the cicatrix on the end of the stump.

The *theory* is no new one; but all attempts made before Palmer to demonstrate its practicability were without success: thus there was proposed the method of support by means of a flexible leather sack or cushion, which, however, only endangered the safety of the stump at every step, by forcing back the integument and soft parts and stretching them violently over the extremity of the bone, thus tending to bring the weight of the wearer on the latter.

The *safety-socket* of Palmer is a box of double leather made to fit the end of the stump exactly by moulding on a cast, and is so held and guided in the interior of the shell of the artificial leg that it is incapable of changing its form by the changing weight to which it is subjected in walking. It keeps its place securely on the stump, and does not allow the integuments to be subjected to any change of strain or any

change of place by means of the movements of the leg in walking. Thus it acts as a shield and protector for the stump guarding it against shocks, and, by keeping the relation between the bone and soft parts uniform, promoting the health and development of the muscles of the stump, and preserving the cicatrix from injury or rupture.

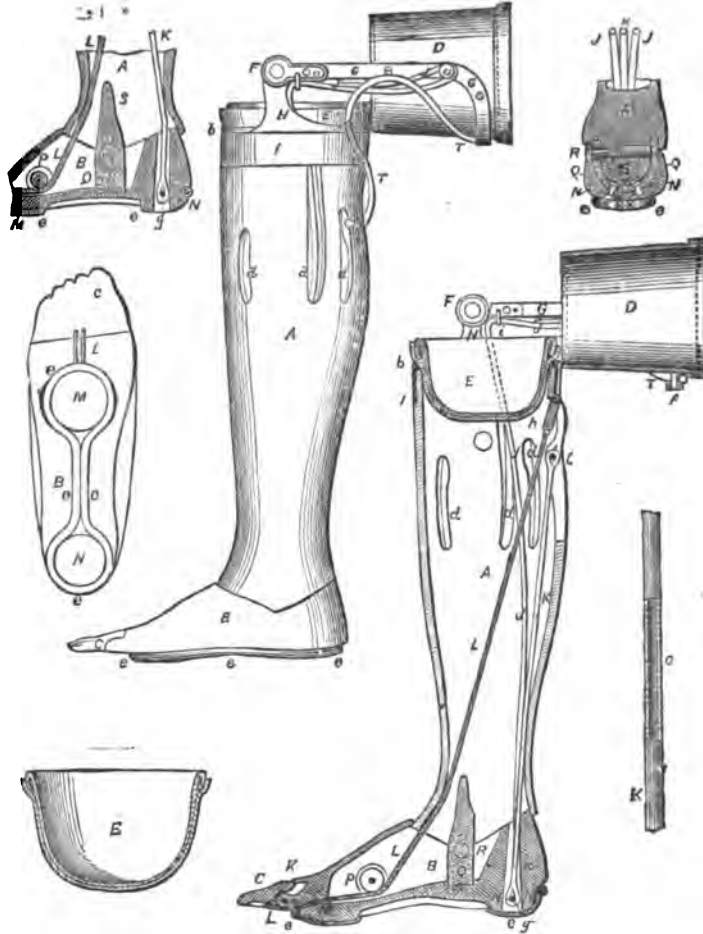
We learn from a report published by Dr. Palmer that this *safety-socket* is now in use by a large number of patients, that it can be worn even on a short and tender stump, taking the weight on the end not only without inconvenience or pain but with a new sense of comfort and security. Dr. Palmer says, "the wearer describes it as being perfectly comfortable, as affording greater control over the artificial limb, and giving to the end of the stump a sensation much resembling that felt on the heel and bottom of the natural foot, and relieving, in a great degree, the nervous sensitiveness which is usually so great a cause of suffering to the amputated."

We have had the pleasure of an interview with Mr. Stohlman, of the firm of Tieman & Co., instrument makers of New York, whose views on Palmer's leg coincide perfectly with that stated above. He also related that at one time he had in his employ a man who wore a common wooden peg-leg supplied with a rubber cushion in such a manner as to receive the weight of the wearer on the end of the stump. Being in the employ of the above firm he had opportunities of trying other artificial legs and did so, but always re-

turned to his "peg" preferring it to all others, because it permitted him to walk on the end of the stump by means of the device before mentioned; how he would have been delighted with one of Dr. Palmer's legs! Mr. Stohlmann was also acquainted with the failure of the attempt to secure this feature by means of the leather sack, and described the objections to it in almost the words of Dr. Palmer himself.

miration in works on surgery—indeed the most eminent surgeons of England, France and the United States have given it their indorsement.

The Prussian government acting on the advice of Dr. Virchow purchased the Palmer models, sending Dr. Palmer as an honorarium a thousand dollars; the Russian government sent to the latter an agent to purchase his new patent, and negotiations are still pending.



If Dr. Herter of Weissenfels says, "I declare without restriction that I know of no better artificial leg, indeed of none so good as Erfurth's, described below," then I think it is very obvious that he could never have seen or been acquainted with Dr. Palmer's.

It would occupy more space than we could afford should we attempt to enumerate the fifty or more honorary rewards Dr. Palmer has received at different exhibitions and from numerous institutions at various times in all parts of the civilized world. We find his invention spoken of in terms of the highest approval and ad-

Dr. Palmer himself having suffered amputation just below the knee during boyhood, has devoted the best energies of a lifetime and his utmost skill as a mechanic to the invention of a substitute that should as nearly as possible take the place of the lost member.

In America there are in existence more than 150 patents for artificial legs, and it is said that there are at least 100,000 unipedes in the country, many of whom have been restored to usefulness and rendered comfortable by some form of artificial leg. Dr. Palmer alone in his experience of 34

years has supplied over 15,000 of these—an actual army on Palmer limbs!

His first patent was granted in 1846, and this was the first patent artificial leg made in this country. Since that time the inventor has added many improvements for which he has been granted corresponding patents, the last being dated 1873 and is the most important of all. The following description is taken from the specification of the American patent No. 137,711, dated April 8th, 1873:

"Figure 1 is a side elevation of an artificial leg having my improvements. Fig. 2 is a bottom view of the foot. Fig. 3 is a longitudinal vertical section of the foot. Fig. 4 is a transverse vertical section of the foot through the ankle-joint. Fig. 5 is a longitudinal central vertical section of the leg. Fig. 6 is a similar section of the stump-socket. Fig. 7 is a view, partly in section, of my improved heel-cord or tendon. The same part is marked by the same letters of reference in all the figures. This invention consists in various details of improvement in the construction of the artificial leg heretofore invented and patented by me, and generally known to the public as the Palmer leg. The object of these improvements is to render the leg lighter, stronger, more elastic, and lifelike in its motions; to adopt it to support the weight of the wearer in certain cases upon the end of the stump by the introduction of a properly-constructed socket; to give a double support to the foot in certain positions, one of which takes effect before the other, by the introduction of supplementary or auxiliary tendons in addition to and in aid of the cord or tendon representing the natural tendo-Achillis; to improve the movement of the toe, and to give a fine, external finish to the false limb. In the drawing, *A* marks the leg proper, which is made hollow, as represented. I prefer to use English willow as the material, as long experience has shown it to be admirably adapted for the purpose. The leg is provided with ventilating openings, *d, d*, in the ordinary manner. Instead of covering it with raw calfskin, as heretofore, I now dispense with that covering at a considerable saving of weight. To compensate for the loss of support resulting from the removal of the hide, I bind the top rim of the leg, the only joint where such support is required, with brass wire wrapped tightly around it and turned off smooth, forming a band, *I*, which gives all necessary strength to that part of the limb, while adding but a trifle to its weight.

The enamel or finish of any kind is applied directly to the exterior surface of the leg. To the upper rim of the leg are attached the lugs *H*, forming the lower branch of the knee-joint. These are hinged at *F* to the upper member, *G*, of that joint. The part *G* is formed in one piece, bowed around the back of the thigh-socket, *D*, as shown in Fig. 1. It is provided with buttons, *a, f*, to which the upper ends of the tendons *Y, Y*, and *T* are attached, as seen in Figs. 1 and 5. The thigh-socket *D* is made of leather, and in the ordinary way, and is adapted to the size of the thigh of the wearer. At its lower end the leg *A* is attached to the foot *B* by means of the ankle-joint *Q*. This joint constitutes one of the important improvements in the construction of the limb. In my former patent this joint consisted of two branches, which ran up the inside of the leg and were united at their lower ends by a bolt which passed through the foot. To support this bolt the foot was made solid consequently heavy. I now make the ankle-joint in the shape of a horseshoe, as shown in Fig. 4, and place it in the bottom of the foot with its ends projecting upward. Through the eyes in these ends is passed the bolt *R*, which passes through the block *S*, which forms part of, and projects down from, the leg *A*, as shown in Figs. 5 and 4. The joint *Q* is bolted or otherwise firmly attached to the foot. This construction enables me to make the foot hollow almost throughout, as shown in Figs. 3 and 5, giving it a lightness hitherto unattainable. Lightness is more important in the foot than in any other portion of an artificial leg, as whatever weight is there acts at the end of a long lever, and serves to impede freedom of movement. The toe-piece *C* is hinged to the foot at *K*, and is made with an entering-joint similar to that at the ankle, presenting no break in the surface. The toe-piece is strengthened by wires run transversely through it to prevent splitting. The toe-tendon *L* is made of two cords attached to the under cavity of the toe-piece, as shown in Fig. 5. They run around the under side of the pulley *P*, and are carried up to a joint at the top and rear of the leg, where each of the cords is attached to a spiral spring *h*. The reaction of the spring tends to draw the toe down. *K* is the main heel-cord or tendo-Achillis. It is made of parallel strands of sewing-silk covered with chamois skin, as represented in Fig. 7. It is fastened near the bottom of the heel by the pin, and runs up to a

point in the back of the calf of the leg, where it is attached by the pin. This main tendon, upon which the greatest strain comes in using the limb, is made larger and stronger than I have heretofore made it, since it is required to be less elastic than formerly, because I now supplement its function by the addition of two auxiliary tendons *X*, *X*, placed one on either side of it, as shown in Figs. 4 and 5. The tendons *X*, *X* diverge at the heel and run up the inside of the leg, and are attached at their upper ends to the buttons *a* on the sides of the bowed joint-piece *G*. These tendons are so regulated in length as to take the strain, ordinarily thrown wholly upon the heel-cord, a little before any part of it is borne by that cord. This relieves the heel-cord, assists in it bearing the strain, and enables me to make it stronger and less elastic than heretofore, as before observed. A back cord or tendon, *T*, is attached to a button, *f*, on the rear side of the thigh-socket *D* (see Fig. 5), and is fastened to the calf of the leg by the pin. The office of this cord is to limit the motion of the knee-joint by a strong and firm yet moderately-yielding attachment in place of the rule-joint heretofore used, which was abrupt in its action, and often caused a 'click,' which was highly objectionable. One of the most important improvements, looking to the ease and naturalness of the tread and movement of the foot, is presented by the protuberances *M* and *N* placed on the bottom of the foot at the ball and heel, respectively. These are most clearly shown in Figs. 2, 3, and 5. They receive and support the weight of the wearer, and allow a lateral movement resembling that of the natural ankle, while unaccompanied by the unsteadiness which has characterized previous attempts to import this movement into the artificial leg. Around these protuberances, after covering them by felt, I place the elastic rubber tubing *e*, arranged as in Fig. 2, and over all attach a covering of buckskin or chamois leather. This construction gives softness and elasticity to the tread, while securing the utmost freedom of movement to the foot compatible with steadiness and safety. To provide for sustaining the weight of the wearer upon the end of the stump, I receive the stump in a socket, *e*, made of leather, and made to conform accurately in length, size, and shape to the stump which rests in it. This conformity is attained by moulding the socket on a cast. I usually make the stump-socket of two

thicknesses. The socket is received in a recess. The stump is not withdrawn from the socket *e*, and there is no feeling of insecurity and no want of precision in the step. The use of silk covered with chamois-leather for the heel-cord is an improvement which I consider important. In my former patents I indicated a preference for the use of catgut for that cord, as I found it much the best material that I had at that time tried; but it is very liable to fray out by friction, is difficult to fasten at the ends, and is greatly affected by changes in the hygrometric condition of the atmosphere. It becomes longer and thus introduces an element of uncertainty and insecurity in the use of the limb. Silk I have found to possess the requisite strength, flexibility, and freedom from change. The formation of the upper member of the knee-joint in one piece, bowed as described, renders the joint lighter and stronger, and prevents the lateral spreading which occurs in those made in the old way. As a covering and support I wind the leg and foot, in whole or in part, with thread. A coating of gum shellac is applied to the wood, and the thread is tensely wound into the gum. To this firm and smooth coating of thread and gum the enamel, principally of shellac, adheres immovably. This covering is not affected by water. Thus, with diminished weight, greater durability and an exquisite finish are obtained.

It may appear superfluous to treat the Palmer leg at such length, since the invention has already been mentioned by the most eminent surgeons throughout the world in terms of the highest commendation, and has been before the profession for thirty-four years; but in view of the fact that many other inventions of a like character have appeared in the market, which by means of a persistent presentation of their claims, have been favored, while the better Palmer leg has been overlooked, we think the article very opportune.

There are too many surgeons who are but indifferently informed on the subject of artificial legs, and patronize the ordinary leg-makers, who rank, compared with Palmer, as a rough empiric with a regular physician of scientific training. It is a fact that some of the most inferior legs are the most productive to their makers, and the influence of such a fact has been deleterious. In England one cannot now obtain as good a leg as was made from 1800 to 1825 by James Pott

for the Marquis of Anglesy; in France there is no leg made that can even be compared with the English, while in Germany the art is taking rapid strides forward.

ARTIFICIAL LEG OF ERFURTH, Weissenfels, Germany, described by Dr. Herter, Weissenfels. (*Vierteljahrsschrift der aerztl. Polytechnik*). — More or less intimately related to the principle of conservatism in surgery, stands the endeavor to furnish the best possible substitute for amputated limbs, and while the greater skill of the workman of our times produces better results, we must not lose sight of the fact that there is an increased demand in this line of industry, stimulating it to greater exertions. Particularly is this true in America; there, if anywhere, one recognizes a modern velocity—a certain intensity of living—manifested in public and social life. Not only the great civil war has furnished, but the ordinary events of civil life, railroad and street accidents continue to furnish a large army of unfortunates who need to be supplied with artificial limbs.

But besides the desire for a proper substitute for the lost member, the necessity of earning a living even under more difficult circumstances is on the average more general and pressing in America than here. It seems to me at least, as if the ordinary man here, among us, is more easily satisfied if something is only done for his support, in some manner or other.

American artificial limbs have for a long time controlled the world's markets, but Germany has been following slowly in her wake, until she too has finally reached an honorable position in this department. So far as I am aware, the Government in providing artificial limbs, makes use only of those of our own manufacture.

The opinion I have formed is, that there exists no better, and particularly for disabled soldiers, no more practical artificial leg than Erfurth's. Assuming that this leg may not be well known to many of the readers of this Journal, I desire to present here a brief description of one for amputation of the thigh. (That for amputation of the leg is, of course, of more simple construction.)

(We do not reprint the cut referring to the original which may be obtained through our office.—*Ed.*)

The socket for the stump (*a*) is made of leather; (*b*) is the knee joint, which

describes an arc between two rods, having a steel bolt as an axis (*c*); on that side of the knee-joint which is invisible in the accompanying cut, a steel band with a hinge joint secures greater firmness, and by means of a brake connected with it, prevents over-extension of the joint.

The ankle (*d*) is, like the knee, composed of a simple hinge-joint, and the same arrangement exists at (*e*) where the toes can be flexed upon the metatarsus, and are kept extended by means of a spring, placed in the sole of the foot; flexion only occurs when the heel is raised from the ground, the weight being supported by the toes. The cut represents the internal arrangement, as it appears after the removal of a portion of its lateral half.

The two cords (*f*), one on the internal, the other on the external aspect of the limb, are made of catgut covered with leather, and are fastened at one extremity, just above the knee-joint, at (*g*), at the other to the heel (*h*); at the same point is inserted (*i*) a strong metallic spring (*j*), whose conducting rod passes through the septum (*k*), pressing against the latter. Supposing now that the leg is fixed in position by rubber straps passing over the shoulders, the stump having been placed in the socket, and the man stands erect; this position can be maintained with great security and without any exertion; since the axis on which the knee-joint revolves is placed sufficiently far behind the line of the centre of gravity; if the wearer desires to remain standing for several hours, the limb can be fixed in an extended position by means of a little bolt.

If he proposes to walk, he has only to thrust the stump and with it the entire leg a little forward, and at once the little spring (*j*) and the catgut cords (*f*) are brought into action; the former (*i*) presses the heel downwards, thereby raising the point of the foot, and at the same moment by its action at (*k*) advances the knee somewhat; the cord (*f*), by its traction at (*g*), flexes the knee-joint. (Fig. 2). By this flexion at the knee- and ankle-joints the line of the centre of gravity of the body is thrown further backward and upward, and since the leg is suspended at the hip-joint like a pendulum, at the same moment the whole leg with its centre of gravity swings forward on its axis at its point of suspension, that is to say, without any physical exertion on the part of the individual it moves forward: once set

in motion, the leg, as soon as the thigh is sufficiently far advanced, following the law of inertia, moves still further forward, until it reassumes its position of extension in relation to the thigh, and support of the stump and control of the same become possible. (Fig. 1) Simultaneously the catgut cords and the spring are again made tense, and their force held in reserve until flexion occurs anew at the succeeding step.

For the purpose of adjusting and increasing at will the tension of the cords (*f*), two accessory springs (*l*) are employed, the force of which at (*m*) can be regulated as desired, while at (*n*) they exert a more or less downward traction on the several cords mentioned. Finally, the rubber band (*o*) is a continuation of the strap by which the artificial leg is suspended from the shoulder, and is fastened just below the knee joint; by its elasticity it promotes the forward movement of the limb.

Since amputation stumps usually possess an integument that is sensitive and easily excited to perspiration, the ventilation afforded by the little opening at (*g*) proves very serviceable.

Of course, all movements of the limb must be devoid of noise and executed smoothly, and in order to secure these ends the joints are lined with leather and felt, and at certain points rubber buffers are also employed. The entire leg made of iron and covered with leather weighs about 4 kg.; the price is very moderate.

The inventor and manufacturer of this leg, the mechanician Erfurth, himself suffered amputation of the thigh some 25 years ago, and presents in his appliance the results of years of arduous and intelligent experimenting with other artificial legs. It is interesting to observe how, without any previous anatomical or physiological knowledge, but by gradually acquired practical experience alone, he has produced so excellent a limb, and, moreover, one that corresponds so perfectly with theory and betrays in its minutest details the acute artist.

In an extremely ingenious manner he has solved the problem of moving forward the leg in stepping with the least possible expenditure of force, while the knee and ankle joints are flexed, and has also secured great stability of the erect position, and rendered the change from the erect to the sitting posture, and vice versa,

absolutely easy and entirely under the control of the will.

The leg is finely finished; Erfurth, who occupies himself exclusively with this specialty, is an artisan of the old stamp, who makes all the legs with his own hands, and the peculiar care with which the work is done and its durability cannot be surpassed. Hence repairs are seldom required, but if they should be, they can be made by any mechanician, as all parts are accessible. Erfurth is competent, and in every case takes pains to adapt the length of the various parts and the force of the springs to the requirements of each individual case, to the shape and power of the stump, etc.

In consequence of the great proficiency which he has attained the inventor can make a new leg in about eight days, and one that will be entirely satisfactory both to myself and the wearer. It is to be regretted that he could not be induced to take out a patent for his leg, consequently it has been imitated with the greatest impunity, but the originals far surpass these copies.

I declare without restriction, that I know of no other artificial leg, indeed of none so good as Erfurth's; I do not affirm that theoretically, in its construction, it presents any superiority over other limbs, —the fact is, that in such a case one is inclined to rather consider the evidence of practical experience.

It frequently happens that disabled soldiers arrive here who have previously worn artificial legs of other construction, made perhaps in Berlin, Magdeburg, Cassel or elsewhere; such parties always hail with pleasure the advantage afforded by Erfurth's leg, and move about with such ease, security, and I might say, "elegance," that one is invariably filled anew with admiration at such perfect prosthesis; unintermitting application to severe physical labor, walking for hours without the aid of a cane, etc., are common occurrences.

(As to German artificial legs in general we wish to observe: It would be singular if starting a century later they had so soon equalled the American leg, whose inventor, Dr. Palmer, yet in the prime of life, being 56 years of age, is still, as he has been for 34 years, wholly engaged with his invention after having treated 15,000 cases and on his own person tested all his improvements, since he himself was amputated when ten years of age. Editor.)

BINAURAL STETHOSCOPE. Manufactured by William Snowden, 7 South Street, Philadelphia.

This instrument is composed of a hard wood bell (*E*), with a soft rubber cup (*F*), two flexible rubber tubes (*C C*), attached to the upper portion of the bell by two perforated nipples at (*D*), two ear pieces (*A A*), of hard wood covered with soft rubber pads, the whole completed by a wire spring (*B*), so arranged as to retain the ear pieces firmly in position when in use. The advantages claimed for this instrument are its simplicity, together with the perfection and accuracy of its acoustics.

The construction of the bell, the perforations at (*D*) being so gauged as to meet accurately at the centre of the dome of the bell. By this arrangement the sounds are transmitted with equal clearness to each ear. The rubber tubes are free from all woolen or silk coverings, thus avoiding all friction sounds arising from this source. The ear pieces are covered with soft rubber pads which effectually exclude all extraneous sounds. The manner of applying the spring pressure to the ear pieces. The ready adaptability to all positions of both the patient and physician, in this, securing the comfort of both.

We have compared this instrument with all the other binaural stethoscopes and find it far superior, rendering the sounds louder and more distinct. It serves admirably the purpose of auscultation of one's self. It has always seemed strange to us that the binaural stethoscopes have not become popular in Germany notwithstanding their advantages in so many prospects.

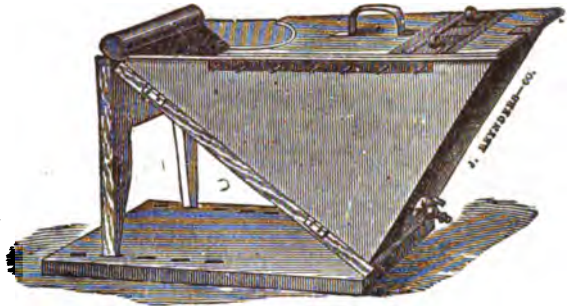
In connection with the article on the Ancient and modern treatment of wounds, the conclusion of which will be found in this number, I wish to mention a form of water bath which I first used in St. Francis Hospital in 1872, and which I found there on entering service, having been imported from Germany.

This water-bath was devised by Billroth, and he thus speaks of it in his Encyclopedia of Surgery, (v. Pitha and Billroth, Chirurgie, Bd. I, Abth. 2, Hft. 2, St. 71): A large number of apparatus have been constructed for the purpose of applying baths to the extremities or to portions of them, but those for the arms and feet are most in use.

The foot-bath should be so constructed that the patient in either the recumbent or sitting posture may be able to keep the

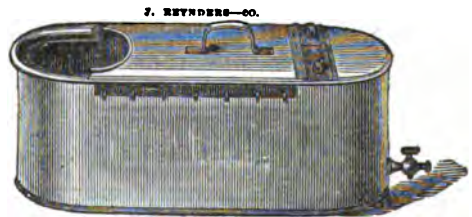
foot and leg immersed as far as the knee, without his being made uncomfortable by the position; this is no easy matter to accomplish.

A water-tub made after my design, (fig. 1) for permanent immersion has been



much used in v. Langenbeck's clinic and adopted in many hospitals. The bed-mattress must be arranged in such a manner that a piece corresponding to the bath can be taken out; the level of the latter must be on a plane with that of the mattress. All baths to which rubber compartments for the limb were attached have proved impractical."

Beside this apparatus of Billroth for the foot and leg, we used another for the arm and head, of an oblong shape, 23 inches in length, 8 inches wide, and 8 deep, with somewhat flaring margins at the open extremity; both apparatus were made of



zinc, and furnished with a movable cover, which by its removal permitted the introduction of the arm and leg, and also with a stop-cock, by means of which the water could be drawn off or renewed. Along the margins of the bath, parallel with the immersed limb, were arranged small metallic pins, to which strips of bandage can be attached for suspending the member, since care must be exercised not to allow the latter to rest against the edge of the bath, for fear of impeding the circulation. The apparatus must be carefully arranged on a shelf beside the bed, in such a manner as suits the convenience of the patient.

The zinc bath for the lower extremity is somewhat larger, its two sides forming an obtuse angle to each other, the apex below and the open base being represented by the superior margins; the whole is supported by a wooden frame into which it fits, and an upright board.

These baths and their mode of use were described by Dr. F. H. Hamilton in the Richmond and Louisville Journal of January 1874, and the New York Medical Journal of May 15th, 1874.

They were manufactured by Otto & Reynders and Geo. Tieman & Co., and I find them in the catalogues of John Reyn-
ders & Co., the latter firm having kindly provided me with electrotypes to illustrate this article; they are also contained in the catalogues of Otto & Sons, and Geo. Tieman & Co., showing that their value is appreciated. (Editor.)

Having shown the original article on Erfurth's leg to the best expert in artificial limbs we received the following communication:

Editor of International Surgical Record—Your favor with the cuts of Erfurth's leg, so called, enable me now, with the specification before me, to inform you that the opinion I have previously expressed is correct.

The leg is copied as to its *shell*, partly from the old English leg of Pott, patented about 75 years ago, while all the *mechanism* seems taken from Palmer's various inventions, which have been in use in Germany many years.

If Mr. Erfurth were an American I should not be able to comprehend his belief in the novelty or the utility of his leg, for it goes back to Palmer's *old* patent, and also draws from Palmer's later patent its remaining better parts or motors.

Figures 1, 2 and 3, (Erfurth's cuts) have Palmer's patented principle of 1873, *badly combined* with certain features of Palmer's *old* patent, and all united into an exterior or frame-work, looking as ancient as the leg made for Lord Anglesy immediately after the battle of Waterloo, or the one in my possession, captured by the American army in Mexico, in the year 1846 (but made long before for Santa Anna).

I am not surprised that an enterprising German should attempt to construct a good leg and I wish him complete success, nor that in the attempt he should make use of Palmer's inventions, which were sold (in models) to the German government, *to be copied* for the Prussian army

and navy, but I *am* surprised to notice the endeavor to combine Palmer's best principles with the superannuated parts of old English legs; it looks like new cloth in an old garment!

It is anomalous—neither American nor English, nor French, nor German,—an Anglesy "bucket," (as the cockney calls the socket) set on a German leg, with a French foot and all the parts interlaced with the American sinews, springs and tendons, of Palmer.

The knee-bolt is set back to a point behind the line of specific gravity, to enable the leg to stand! Thus, an evil run into in France a century ago, is ignorantly revived, though Palmer abolished it in Paris in 1851, and his services were fully recognized there by Roux and Velpéau. The ancient Frenchman said, "how shall I make the leg stand? A knee-catch will do it, but that is a bad arrangement; what then? Ah," said he, "I have it; set the knee-bolt back and the ankle-bolt forward of the natural position!"

And he had it,—but with it two evils for one. The unlucky Frenchman found his leg would stand well but would not go well. The German will only be longer about it, but he will nevertheless learn that two joints "out of joint" do not operate well.

"But," says the leg-maker, "how shall shall the knee be made to stand?"

"Why, my dear fellow, just in the same manner as the natural knee, by allowing the flexor muscles of the leg and thigh to give the extensors freedom from resistance in the knee and ankle-joints when in motion, (both being in the natural order) till they take their respective positions just where the German now puts them—as regards the line of gravity, but not as relates to the two joints—apart from combination with the swinging leg.

How strange that a man testing the leg in his own person should not see (and feel) that slight elongation of a knee tendon, causing greater forward motion of the leg and foot—exactly imitating the natural member—would fix the knee securely, without giving the stiff, rigid, and unnatural action of a knee and ankle when both are out of place.

The old strap of the Anglesy leg to facilitate extension, is seen on this leg, and the tendon and mortice-joint, so long in disuse in this country, though still employed in London, figures on the front.

Such are the good and the objectionable features of the Erfurth leg. We do

not find many of the better parts of the "American leg."

The perfect frame work of the Palmer leg,—its tubes and joints which form a system of arches (to gain strength and save weight)—is not found. The perfect contour of the Palmer, and its cover of raw-hide beautifully tinted with enamel, giving it life-like beauty and rendering it strong and proof against water, are not seen in this leg. In short, as a piece of mechanism, while it has good parts copied from the Palmer, and while it rejects, and sensibly—even as a wooden leg—the "lateral motion," it is not superior to many imitations of the Palmer leg in America, and without the Patent "Safety Socket" of the new Palmer leg, it can only be spoken of in contrast, not in comparison with the best American legs.

EXPERT.

MISCELLANEOUS.

It affords us great pleasure to translate from the *Illustrierte Vierteljahresschrift der ärztlichen Polytechnik*, 1880, No. 1, the following notice of Geo. Tiemann & Co's American Armamentarium Chirurgicum:

Though for obvious reasons we are not in the habit of devoting space in our editorial columns to catalogues submitted for our inspection, we feel justified in this case in departing from our rule, since we have before us a thoroughly exhausting and magnificently arranged work which can by no means be compared to any of the catalogues generally published by business houses, either on this or the other side of the Atlantic. Printed on 600 pages of the finest quality of paper, containing 2000 illustrations to many of which a description is appended, it is far superior to anything of its kind.

The array of modern surgical instruments is very extensive of which conservative surgery receives its share; the apparatus for fractures are also numerous while those devoted to orthopedic purposes, although represented by some of an interesting character, do not appear to belong among the specialties of the firm.

We are not aware that the volume can be obtained through the bookseller; if such were the case it would form a handsome gift for the hospital surgeon, to whom it could not fail to be highly acceptable.

Before us we have the third edition of John Reynders & Co's illustrated catalogue and price list of surgical instruments, orthopedic apparatus, etc. This fine volume is especially elaborate, particularly so in the department devoted to orthopedic appliances.

Messrs. Reynders & Co. are manufacturers for Lewis H. Sayre, Charles F. Taylor, N. M. Shaffer, prominent orthopedic surgeons of New York.

A modern specialty of the German trade are the preparations for antiseptic dressings.—The German preparations are highly appreciated, particularly those of Gebrüder Stiefenhofer of Munich, who manufacture the dressing material for Professor v. Nussbaum. As is well known, Lister's method is carried out most rigorously and minutely by German surgeons, and for this purpose the most perfect dressing material is greatly in demand.

In a letter which we received from the Gebrüder Stiefenhofer, instrument makers of Munich, Germany, this celebrated firm says: "We manufacture orthopedic appliances, but in this field you in America are farther advanced than we in Germany."

When we gave the article on the Bly leg in our last number, we availed ourselves of the catalogue of Mr. Geo. F. Fuller, in which this artificial leg was described. An observation like the following occurred in the passage concerning the springs used in the leg in question. "This will be appreciated by those who have worn legs with metallic springs; especially by those who have worn Palmer legs." Having actually had no opportunity of examining the comparative merits of the rubber and metallic springs, it was through an oversight that the passage appeared. We have since learned that Dr. Palmer's springs are still generally "metallic," he having patented in 1850 and then rejected (on trial of one hundred cases), the rubber springs.

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Gebr. Stiefenhofer, Munich;
C. Walther—Biondetti, Basel;
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Read the following certificate:

11 RUE NEUVE DES CAPUCINES,
PARIS, February 20th, 1879.

Editors North Carolina Medical Journal.

GENTLEMEN:—I cannot conclude this letter without saying a word in regard to a medicine which has recently been introduced into France by our enterprising countrymen, Messrs. Wm. R. Warner & Co., of Philadelphia. Among other specimens of their exhibit at the recent Exposition, their agent in Paris very kindly sent me several bottles of *Ingluvin*—prepared from the gizzard of the chicken,—with the request that I would give it a fair trial in the treatment of gastric irregularity and disturbance. I am pleased to be able to chronicle the fact, that, in three cases of pronounced atonic dyspepsia and in one case of chronic indigestion, it has acted like a charm—promptly relieving all disagreeable symptoms and restoring the stomach to its proper functions. My patients, who had previously tried without benefit all ordinary forms of pepsine, bismuth, cerium, nuxvomica, etc., etc., are delighted with this new remedy and assure me that they experienced benefit from the first dose. Hereafter I shall prescribe it liberally and with great confidence in its therapeutic value.

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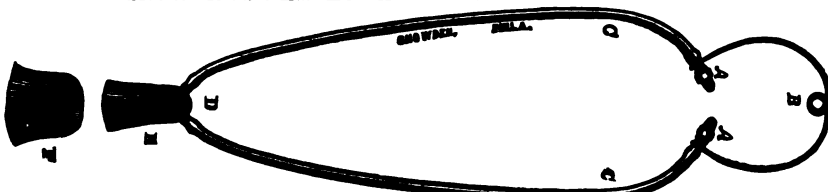
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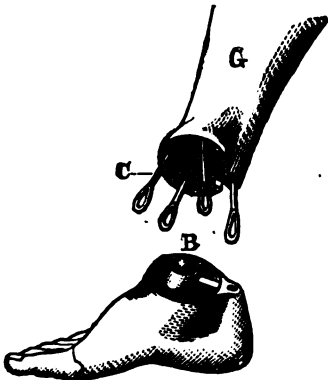
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OSTEO-PLASTIC RESECTION OF THE ELBOW-JOINT.

By DR. O. VOELKER OF BRAUNSCHWEIG.

(*Deutsche Zeitschrift für Chirurgie.* XII, 6.)

Under the above title I desire to present to the consideration of my colleagues a method of operation which, so far as I am aware, is new, and to which, I believe, will be accorded a permanent place in the sphere of operative surgery. It was devised in a case that fell under my observation, and which thus far remains the only one operated on by me in the manner indicated; it seems, therefore, very fitting that I should give the history in detail.

A pupil, 13 years of age, named Weyl, applied to me for advice on account of an injury to his left elbow-joint which he had received six months before, at which time, while in the gymnasium, he had fallen with his left hand outstretched and dislocated the ulna and radius; repeated attempts at reduction were at once made, but without success. On examination I found an old complete external lateral luxation of the forearm. The head of the radius projected markedly on the external side, and its slightly concave articular surface could be distinctly defined with the finger; on the opposite aspect of the joint the internal condyle of the humerus formed a prominent ridge, the epicondyle, however, not being so sharply outlined as was to be expected, had evidently been fractured. The olecranon had abandoned the trochlear surface of the humerus and now grasped the external condyle, the forearm formed an obtuse angle with the arm, flexion and extension being limited to a slight rocking motion, and the hand was in a position of semi-pronation, the power of rotation being abolished, undoubtedly a result of ankylosis of the inferior radio-ulnar articulation due to long-continued disuse.

All these abnormal conditions rendered the arm almost useless, but added to them there existed disturbances of the sensory and motory functions of the ulnar nerve. On the ulnar side of the hand the fourth and fifth fingers were of a purplish color and felt cold to the touch; pricking with a needle showed a diminished sensibility

of the parts, and the patient complained that the latter felt chilly and numb. When the hand was laid upon the table the wrist-joint was found to be slightly flexed, the fingers extended at the metacarpo-phalangeal articulations and the phalanges partly flexed; the space between the metacarpal bones was markedly depressed, and the muscles of the thenar and antithenar eminences were in a condition of advanced atrophy. The action of the muscles supplied by the ulnar nerve was still distinct though much enfeebled, showing that there existed a strongly marked condition of paralysis, the cause of which was not difficult to comprehend; by the external lateral luxation of the forearm, the nerve, in its passage behind the internal condyle of the humerus, had been subjected to considerable stretching which must have deranged its conductile power and eventually would have entirely destroyed it.

Although the usefulness of the ankylosed arm in its present abnormal position was very limited, yet that consideration alone would scarcely have justified any operative interference, but the condition of the ulnar nerve seemed to me an indication of the absolute necessity of correcting the faulty position of the forearm; did I succeed in relieving the tension of the nerve, recovery from the already far advanced paralysis might be expected, while, if left to itself, the latter threatened to become complete, with loss of the use of the hand.

What was to be done? In the first place, replacement of the luxated forearm might be again attempted under chloroform, though with but little prospect of success, for, if,—reasoning from the failure of the first attempt at reduction made directly after receipt of the injury,—it was to be assumed that some peculiar obstacle of an unknown character stood in the way of success, then all hopes of the latter must be destroyed by the long duration of the luxation; were such the case recourse must be had to resection.

According to the method of operation heretofore practiced, incisions were first made along the radius and ulna, and after loosening the humerus from its attach-

ments, it was resected at the point indicated,—the periosteum being preserved, or Vogt's method adopted,—the fragment seized through the external incision, and by division of the adhesions, severed from its connections with the bones of the forearm; the choice then remained to limit the operation to this partial resection, or to make it a total one by removal of the olecranon and head of the radius. But resection of the ankylosed elbow-joint is never, by any means, a simple operation, and, I believe, is peculiarly difficult in the case of a lateral luxation; in the present instance, on one side were the deeply situated external condyle of the humerus, and the very prominent radius which impeded the necessary manipulations; on the other, was the ulna thrown far back, and the internal condyle of the humerus forming a sharply defined ridge above it, and, therefore, the difficulties, although perhaps not insurmountable, were certainly of no trifling character. Added to these, was the uncertainty of success; however favorable might be the results recorded in this class of resections, it was not impossible that a loose and preternaturally flexible joint might be the sequel here, and that would be a fall from Scylla into Charybdis.

While engrossed in these considerations and engaged in studying out the pathological relations of the joint by means of macerated bones, the idea struck me that the olecranon was the real key to the articulation, that a resection of it at its base would afford an unobstructed view of the interior of the joint, and that then it could not be difficult, after destroying the adhesions and removing whatever other obstacles to replacement existed, to reduce the luxation. Recent experience on the subject of the suture of bones, as for instance, in fractures of the patella, (witness also Volkmann's resection of the knee-joint after transverse section of the patella), fully warranted me in expecting that the olecranon would again unite with the ulna by sufficiently firm union. Did we succeed in reducing the displacement, and at the same time preserve the articular surfaces, the conditions then became almost analogous to those in transverse fracture of the olecranon, the after-treatment being of course more liable to complication here; moreover, here as well as there, after waiting a certain length of time for the process of union, active and passive motion might be undertaken to re-establish the function of the joint.

This was without doubt the most that could be demanded from operative surgery under the circumstances,—the ideal to be aimed at.

On the other hand, were reduction impossible without destroying the articular surface, then in the widely gaping joint any variety or degree of resection might be undertaken, from the removal of a superficial layer of cartilage to that of both condyles of the humerus and the head of the radius; the olecranon and the ulna must not be touched. Of course operation was not to be thought of without the absolute assurance that strict antiseptic treatment could be adopted, and an aseptic (aseptisch) issue could be guaranteed.

Feeling reassured in respect to the latter, March 8, 1879, I undertook the operation described below, being assisted by two of my colleagues who had approved of my plan of operation, and an assistant as "spray-producer."

The patient having been chloroformed, to satisfy our consciences more than anything else, very powerful attempts at reduction were made, which, however, as we foresaw, were useless, the only result being slight crepitation in the region of the ulnar-nerve where it passes behind the internal condyle of the humerus; having applied Esmarch's bloodless apparatus, I made the following incision:

Beginning at the summit of the olecranon, I carried the scalpel downward and outward in the longitudinal axis of the humerus as far as the articular surface of the radius, thence across the base of the olecranon to its inner border and along the latter upward to its summit; the knife penetrated to the bone, the anconeus muscle being completely divided. From the joint thus exposed poured forth a half teaspoonful of blood, proving that our efforts at reduction had not been wanting in vigor.

After detaching the periosteum of the olecranon only sufficiently to permit the edge of the saw to work freely, the bone was divided from the radial side by very short strokes exactly on a level with the head of the radius, the point of the instrument penetrating the articulation; but the opposing surfaces could not yet be separated nor was the fragment dragged upward by the tendon of the triceps. The adhesions which were markedly suffused with blood on account of the violence to which they had been subjected, and which by their interlacing network bound to-

gether the various component parts of the joint, were now divided and extirpated, permitting the latter to be freely exposed, so that a distinct view of its interior was possible even as far as the anterior surface of the trochlea; to the anterior margin of the latter the capsule was adherent, requiring considerable force to detach it, and imbedded in the capsule and the cicatricial tissue were discovered two minute fragments of bone.

The forearm could now be placed in the normal position, so that the greater sigmoid fossa articulated with the trochlea, and the radius with the radial head of the humerus, though when unrestrained the limb reassumed its malposition, and it was obvious that it could only be retained in place by artificial means until union of the olecranon had occurred. But the latter still remained fixed, for although I had detached the capsule on the ulnar side, on the radial it still remained adherent; freeing it entirely, the process was drawn upwards by the triceps tendon, thus permitting a view of the olecranon fossa into which thus far it had been impossible to force the olecranon, and the cause of the impediment now became apparent. In the fossa was a small fragment of bone, whose outlines were still distinct although smooth and rounded off, which had become adherent to the floor of the depression; it was removed with the chisel, and the newly formed osseous deposit thoroughly extirpated with a gouge; the olecranon could then be brought into place.

I now proceeded to apply my sutures, and for that purpose employed a stout Singer's sewing machine needle, which has an abrupt smooth point resembling that of the iron or bone drill; having screwed it into the handle of a laryngoscope, it answered the purpose very well. The needle was first thrust through the bone, and then through the eye which was situated very near the point was passed a thread of sea-grass, which, upon withdrawing the instrument, was left in position. In this manner, proceeding from the inner aspect of the limb, I inserted two ligatures; the one penetrating the base of the olecranon near its anterior articular surface, the other near its posterior surface, and both being carried through the superior extremity of the ulna; the ends being knotted and cut off while the arm was somewhat flexed, perfect approximation of the resected bone surface was secured, and the extreme

toughness and firmness of the ligating material insured a permanent union. The reduced forearm still showed an inclination to reassume its old position, due partly to the fact that the head of the radius, striking against its point of articulation with the humerus, acted as a lever to throw the forearm from the arm, and partly to the stretched condition of the capsule and ligaments of the joint, a result of the long existence of the luxation. The removal of the articular surface of the radius remedied this difficulty, and I finally proceeded to apply the necessary sutures to the soft parts.

Believing that no hemorrhage of any account was to be apprehended, I closed the wound, leaving a small aperture on the ulnar side of the base of the olecranon into which I inserted a drainage tube, but upon removing the rubber constricting tube the hemorrhage proved so profuse that I was obliged to take away the latter and to also insert a ligature or two here; by such a procedure and the application of a compress bandage I hoped to control the hemorrhage, as I had succeeded in doing in other cases, intending the following day to make provision for drainage. The operation was completed by applying the moist antiseptic dressing, and a plated tin splint to the inner side of the limb, enclosing about half its circumference, and bent at a very obtuse angle at the elbow where it was separated into two portions united by wires that were bow-shaped.

The following day on changing the dressings, they were only slightly stained with blood though the articulation was found to be considerably distended with it; the ligatures were therefore extracted at the point where it was proposed to establish drainage, the cloth removed from the cavity of the joint by gentle pressure, and the drainage tube introduced. There was no fever, and an entire absence of pain; gastric disturbances, the result of the chloroform, were present; Sodae Sulphas was prescribed.

On the third day there was a general improvement in the patient's condition—no pain, but little oozing of blood from the wound and no effusion of the same within the articulation—but unfortunately the margins of the incision throughout their whole length and for about $\frac{1}{2}$ cm. in width were gangrenous; the sutures of the bone remained undisturbed, and the dressings were applied as before and left in place for three days. Recovery there—

after was entirely uncomplicated by febrile or other unfavorable constitutional symptoms; the drainage tube was removed at the next dressing, the latter being from that time repeated every eight days. Discharge was extremely slight, the separation of the gangrenous parts advanced very slowly, and there was no complaint of pain at any time.

After three weeks the patient was allowed to get up. The olecranon seemed to be firmly united, but the progress of gangrene was still uncontrolled and I feared it would invade the capsule, and therefore dispensed with passive motion for the present, flexed the arm at a more acute angle, placed it in a sling after exchanging the moist antiseptic dressings for a lighter Lister's gauze dressing surrounded by salicylated wadding, and permitted the patient to go about.

By carefully instituted examination at each change of dressing, I became convinced that the gangrene was limited to the integument while the wound of the capsule had united, and therefore, four weeks after operation, I began more thorough active and passive motion; it was now possible to almost completely extend the arm and to flex it at an acute angle, the union of the olecranon being apparently perfect and movements of the joint giving rise to no crepitation or pain. Rotation of the forearm was re-established by forced supination, which was accompanied by a distinct cracking noise in the wrist-joint and a friction sound caused by contact of the decapitated radius with the radial head of the humerus; pain was only present in the inferior radio-ulnar articulation.

The separation of the gangrenous parts still advanced very slowly, and I therefore aided it with the scissors, taking care not to wound the healthy structures; the granulating surface became covered with a yellowish secretion which was very adherent and slowly gave place to the advancing cicatrization. The entire olecranon was covered with granulations, and I now exchanged the above dressings for one of a slightly stimulating character and applied the nitrate of silver; under this treatment a smooth and healthy cicatrix resulted.

The shape of the joint is entirely normal, only on close inspection can it be discovered that a line drawn through the ulna from the summit of the olecranon is slightly deflected inward at the point of resection.

The effect of the faithfully applied movements has been to secure now, by active, what four weeks after the operation could only be attained by passive, motion; indeed, there has been a steady progress in this respect; the arm cannot only be almost completely extended, but the power of flexion is so far restored that the patient is able to touch his neck with his fingers and execute all the ordinary manipulations about the head. Rotation of the forearm is entirely free, though the friction sound in the humero-radial articulation still persists.

The strength of the parts is normal, and the function of the ulnar nerve is perfectly re-established. As early as the day following the operation, the numb feeling, and the subjective and objective sensation of cold in the little and ring fingers had disappeared, and the color of the integument, and sensibility were normal. These results have proved permanent, and as an evidence that the motor conductivity is also again unobstructed, the spaces between the metacarpal bones have again filled out and the thenar and antethenar eminences recovered their prominent outline. On the whole, the results reached are very satisfactory, the objects aimed at have been realized: the ulnar nerve has been saved, and a joint of a natural shape and possessing almost normal functional capabilities, been secured.

A typical resection, as to the shape of the articulation, could by no means have accomplished so much, while as to function, only in the most favorable cases could more have been expected. Moreover, it is only fair to assume that under other circumstances the functional results of the operation would have been even more satisfactory, since in my case there were two unfavorable complications: the superficial posterior trochlear surface and the gangrene of the flaps.

We found in the olecranon depression a fragment of bone, evidently a portion of the fractured epicondyle, and those near the ulnar nerve were of the same origin. It was undoubtedly the former that had prevented the reduction of the luxation directly after receipt of the injury; later, it had become fixed in place by bony deposit so as to fill up the fossa. It is true, the mass was removed with the gouge, but, without doubt, was reformed, at least, to a partial extent, and, consequently, occupying the place of the olecranon in extension, rendered the latter incomplete; but even this partial obliteration of the

fossa would have been avoided, and the olecranon would have formed an articulation for itself, had it not been that, on account of the invasion of the flaps by gangrene, the time for beginning passive motion had to be postponed. In regard to the latter point, it is possible that I myself may have exercised undue caution; at all events, at any future repetition of the operation, in the first place, I shall make no attempts at reduction immediately preceding the same, since such a procedure must necessarily result in injury to the integument in the region of the articulation; secondly, shall not employ Esmarch's apparatus, since no severe hemorrhage is to be apprehended, and, moreover, the technical difficulties attending the operation are so few that one is not impeded by the flow of blood; thirdly, I shall see that such hemorrhage as occurs is completely arrested before applying my ligatures to the soft parts.

That Esmarch's bloodless method predisposes to gangrene is universally recognized, and it is particularly contraindicated when the anatomical relations of the integument lead one to fear gangrene from pressure, as is actually the case over the olecranon; such a complication, in my case, I attribute to violence done the integuments in the attempts made to reduce the dislocation, the employment of Esmarch's apparatus, the pressure of the effused blood within the joint and the dressings without. Great care must be taken that no further flexion of the arm is made after applying the latter, since it would give rise to undesirable pressure on the posterior aspect of the articulation; indeed, in order to avoid this very danger, I would recommend that the angle of flexion at dressing be more acute than that of the splint in which the limb is to be laid; moreover, the danger of gangrene from pressure appears to me so great that I question whether it would not be better, for the first few days at least, to treat by antiseptic irrigation.

That my case will not remain an isolated one, that the osteo-plastic resection of the elbow-joint is applicable to a limited though constant sphere of indications, and that it will therefore survive, I believe I am warranted in assuming; founded upon correct principles, in the very first case its results are most excellent in spite of adverse circumstances.

The main question is this: Can we reckon with certainty upon union of the

resected olecranon? We can if we are sure of the efficiency of our antiseptics. If this question decides the fate of the operation, it also prescribes the limits of its indication: *It is only admissible when we are absolutely certain of the integrity of the olecranon.*

All our endeavors in the various methods adopted in elbow-joint resection have been directed towards the one object: to preserve the relation of the triceps tendon with the forearm; here, it is true, by resecting the olecranon this relation is severed, but only temporarily (hence I have adopted the name Osteo-plastic Resection of the Elbow-joint); but the condition must necessarily remain a permanent one if any morbid state of the resected process should render union impossible. Admitting this, a large majority of resections of the elbow-joint, being undertaken for caries, is excluded, since in such cases it would be difficult, if not impossible, to demonstrate before operation, the positive integrity of the olecranon. But it is particularly commendable in recent and chronic luxations because it is more easily performed and less grave than the typical resection, and because, moreover, in certain cases the latter is not actually indicated, but only a reduction of the displaced parts after opening the joint. Then too, the operation is absolutely devoid of all technical difficulties; the incision adopted above, forming a quadrilateral flap, will always suffice to expose the articulation to the extent desired; indeed, I even believe that the external lateral incision might be dispensed with.

In the case of recent irreducible luxations, after resection of the olecranon and removal of the obstacles to reduction, which, by the thorough view afforded of the interior of the joint can be readily discovered, nothing more remains to be done but to replace the luxated bones, an undertaking that must now be easy of accomplishment; after suture of the olecranon process no inclination to relapse can exist, since the soft parts have not yet adapted themselves to the pathological conditions present. In chronic luxations the case is different; here, the bones are fixed in their abnormal position, and the resisting soft parts must be detached as necessity may require; for instance, in such cases as in mine, it may be necessary after having retracted the integument, to incise the capsule on the radial side of the olecranon in order to free the latter; the integument and triceps tendon

are then its only attachments, a circumstance that renders our apprehensions of sloughing justifiable. Should our attempts at reduction still prove fruitless we may proceed to partial resection of the articular surfaces, only so much being removed as may be required to accomplish the end in view, whether it be the radial head or the entire Processus cubitalis; the latter can be so freely exposed that the resection can be made with the chisel and bone-cutter, or in youthful subjects with the osteotome. As to the general functional results of such partial resections but little can be said without a wider experience; so much, however, appears to me certain, that by such a method we shall not so frequently encounter that so much dreaded result of elbow-joint resections, a loose and preternaturally flexible joint, as by the old. The threatening ankylosis must be avoided by early instituted passive motion, to which active are also afterward added. I think we may begin with the former, at first in a mild degree, as early as the end of the second week, but neither must the summit of the olecranon be thrown into the olecranon fossa nor the triceps tendon be strongly flexed, since in both cases the line of union between the resected process and the ulna might be disturbed; for the same reason, it is better for the first few weeks to flex the arm at a very obtuse angle, which can be diminished to a right angle at a later period.

I might also add, that "Osteo-plastic Resection of the Elbow-joint" may occasionally be of value for the removal of foreign bodies, whether penetrating from the exterior or formed within the articulation as in the case of floating cartilages, or fractured fragments of bones.

I hope that this communication will lead others to test the merits of the method advocated, and the results, I am confident, will be the best recommendation of its value.

PERFORATING TUBERCULOSIS OF THE CRANIAL BONES.

By PROF. R. VOLKMANN.

(Centralbl. für Chir. 1880.)

Tuberculosis of the cranial bones is comparatively rare, and has as yet received but little attention, although a very typical form of disease, and one that is distinguished from syphilis of the cranial bones by special and marked characteristics.

In all, twelve cases have fallen under my observation, and in each of them either the frontal or the parietal bones was involved; of the latter, especially, a careful histological examination was made.

In all the cases that I have seen the disease was limited to a single and well defined circumscribed spot, and the cheesy degeneration and subsequent ulceration and necrosis involved the whole thickness of the bone, in such a manner that upon its internal surface the dura mater, and upon its external surface the periosteum, had become detached by suppurative inflammation; a minute perforation of the bone also existed. Finally, in all cases except one,—in which the affection made its appearance as a pseudo-fluctuating granuloma over the frontal bone, and differed from a syphilitic gumma only in its remarkable size, and in the circumstance that the integument soon became reddened and inflamed,—an abscess formed over the bone, with at first no change in the overlying structures, and altogether without any well defined symptoms; moreover, these abscesses were of such a flabby consistency, that at first sight I thought I had to deal with a case of traumatic cephalæmatoma, but upon discharging their contents, either spontaneously or after operation, they were found to contain a large amount of a characteristic cheesy material, and after opening them with a free incision, the inner surface of their walls was discovered to be abundantly covered with fungoid granulations, which on microscopical examination revealed numerous cheesy, miliary tubercles.

A characteristic feature of these granulations was the readiness with which they could be washed or scraped away, after which the diseased bone surface from which the abscess had originated became distinctly visible. Corresponding to the size of a bean or of a ten-cent piece, the osseous structure was in a condition of cheesy degeneration, anaemic, and in many instances sequestra of the form of a pea or a coffee-bean were present, and could be removed by means of the elevator or scoop.

These sequestra in every case involved the whole thickness of the bone, and were in all respects analogous to those formations which I have lately described as a frequent occurrence in fungoid inflammation of the joints, especially in children, and which are usually of a very minute size (see the numerous illustrations contained in my clinical lectures: Ueber den

Character und die Bedeutung der fungösen Gelenkentzündungen).

In other cases there were no sequestra present, but at an early stage a perforation of the osseous structure of the size of a pea or lentil had occurred, and there was a distinct pulsation of the pus and other morbid secretions which covered the site of the disease; in one case an abscess as large as my hand, cold, and still closed, pulsated strongly over a perforation no larger than a pea.

Since the first cases that came under my observation, having been left to open spontaneously or been assisted by a small incision healed very slowly or not at all, —leaving fungoid fistulae communicating with the dura mater, the process of cheesy degeneration in the bone advancing slowly and in some instances violent symptoms due to retention of pus between the dura mater and the bone intervening, —in later cases I adopted a more active treatment. The abscess was laid open by free incision, the fungoid granulations were carefully removed, the bone scraped, —trephining being performed in four cases, —and from the dura mater the fungoid growths and tubercular deposits with which it was covered were cleared away. Under antiseptic treatment I invariably succeeded in securing at least a rapid union of the pericranium which had become detached by the abscess, and in no case was the operation followed by any ill consequences; however, in only one-half of the cases thus treated was a rapid and complete cure effected, and even then very powerful cauterization became necessary at a later period in order to secure healthy granulation and cicatrization.

Trephining was performed in such cases in which a line of demarcation between the morbid and healthy osseous structure was not yet developed and no sequestrum existed, or when, notwithstanding the presence of a sequestrum, the margins of the perforation formed by the progress of the necrotic process exhibited a condition of distinct cheesy infiltration. The area of surface involved in every case was so circumscribed that it was only necessary to remove a portion of bone of the size of a ten cent piece or a quarter of a dollar and expose the dura mater to the same extent. The operation was performed partly with the chisel, and partly by the use of Luer's resection forceps, the surrounding osseous structure being in some cases so sclerosed that the successful application of the latter required a great deal of force.

The following is a history of the last six cases under observation: 1) F., farmer, aged 32, of a tuberculous family, has suffered for nine months from a fluctuating tumor over the right parietal bone, which has grown slowly until it has reached the size of a man's fist; is troubled with headache; the integument covering the mass had become reddened and oedematous; on admission distinct pulsation was perceptible.

A small incision having been made, a large amount of a white, chalky-like pus was discharged, in which was discovered a portion of bone of the size of a pea, upon which the external periosteal surface and the internal tabula vitrea were distinctly visible. This sequestrum was of a strikingly pale yellow color, resembling sulphur, at the same time very firm, while the diploë was obstructed by cheesy masses. The abscess having been washed with carbolic acid, drainage was established and a compress bandage applied; the wound remained fistulous until the patient's death which occurred four years later from arthro-chondritis with the formation of large abscesses, and pulmonary tuberculosis.

2) S., female, 17 years of age; presented a pseudo-fluctuating tumor of the size of a hen's egg, situated on the left side of the frontal bone near the sutura coronalis, and was at first regarded as an ordinary abscess, but upon free incision no liquid pus being discharged, found to be of tuberculous origin; in the bone beneath was found a perforation as large as a coffee-bean, and a sequestrum of corresponding size; the margin of the perforation was sclerosed but otherwise healthy. The morbid growth was thoroughly removed, and recovery was complete in three months after repeated cauterizations of a fistulous opening that continued to discharge. Three years after the operation, the patient is still healthy, although scrofula and tuberculosis are hereditary in her family.

3) K., boy, 5 years of age, of an apparently healthy family. Three months before admission, there was observed over the centre of the left parietal bone a small fluctuating tumor which had gradually increased to the size of a walnut. Upon incision there was a discharge of cheesy matter, and a portion of the bone beneath, of the size of a quarter-dollar, was found to be infiltrated by the same material; in the centre of this diseased portion was a detached sequestrum as

large as a cherry stone, after the removal of which the sound entered a considerable collection of pus situated between the dura mater and lamina interna. Trephining was performed. On the external surface of the dura mater, imbedded in a superficial layer of granulations, numerous pearl-colored miliary tubercles could be recognized with the naked eye. The treatment in general was the same as in the preceding and all following cases, and resulted in rapid recovery, and the portion of bone removed was apparently being replaced by a newly formed osseous structure. Almost directly after this the child was attacked by an exceedingly severe fungoid inflammation of the left elbow-joint, resulting in cheesy degeneration, and the discharge of a sequestrum the size of a pea from the internal condyle of the humerus. Twelve fistulae were formed, and the same morbid condition of the axillary glands ensued. Resection of the ulnar was performed, and removal of the affected glands. Recovery followed.

4) S., a physician, aged 27; had suffered long from scrofulous affections, such as Otitis media, Episcleritis, Osteo-periostitis of the Sternum, and had been treated but a short while before for a cheesy abscess of the lymphatic glands situated on the right side of the neck and extending deeply down between the oesophagus and the vertebral column. Six weeks before I saw him a scrofulous abscess had made its appearance over the frontal bone, somewhat to the right of the median line, and near the sutura coronalis, and had increased to the size of a walnut.

After incision of the abscess it was found that a portion of the os frontalis as large as a bean was diseased, and a pea-size perforation also existed; here also the probe penetrated an accumulation of pus situated between the bone and the dura mater.

Chisel-trephining was performed, a portion of bone the size of a pea being removed. From the dura mater were carefully scraped away a large number of minute, distinctly visible, cheesy nodulae, and the whole abscess thoroughly cleared of all granulations. The recovery was slow, and only after repeated cleansing of the wound and numerous cauterizations, leaving a deeply contracted cicatrix and a deficiency of the bone that could be easily recognized by the finger.

5) W., female, 17 years of age, upon whom shortly before an almost complete

resection of a rib had been performed^{er} tuberculous caries. An abscess half^{er} size of a hen's egg was present overⁿ⁻ right parietal bone, and she suffered fr^{il} severe headache. On incision of the abscess the underlying bone over a space as large as a two cent piece was found to be denuded, anaemic and of a yellowish color, and from a minute perforation pus was discharged in an interrupted stream. Treated like the preceding case. Beneath the dura mater was found a considerable collection of pus. Recovery ensued, complicated by fistulae. After a few months the patient returned, the disease of the cranial bone having apparently made new progress, but what is more, a very severe fungoid coxitis had developed itself and necessitated the performance of resection of the femur. The articulation and several abscesses communicating with it were found densely packed with a thick, semi-solid tuberculous material, and the synovial membrane was in an advanced state of fungoid degeneration. The patient is still under treatment.

6) F., female, aged 25, wife of a for-ester. Had been previously married to a man who had died of Pulmonary Tuberculosis, complicated in all probability by Basilar Meningitis.

During the preceding three months a cold abscess as large as a man's fist had been forming over the sixth and seventh ribs, on a line with the mamellae, and also a tumor of the same character beneath the hairy portion of the scalp, over the centre of the os frontalis. The latter had opened spontaneously a short time before, and a sequestrum of the size of a pea had been discharged. After free incision of the thoracic abscess, a result of periostitis of the sixth and seventh ribs, and thorough cleansing with removal of the fungoid granulations, the wound was carefully united by suture and provision for drainage was made. Recovery was such that merely a minute fistulous opening remained, accompanied by very slight discharge. Ten days later I incised the fistulous track, and upon examination with the probe, roughened and denuded bone was found beneath. In the latter was discovered a perforation of the size of a coffee bean, and the surrounding osseous tissue was infiltrated with cheesy material. Trephining and resection of a portion of the bone as large as the distal phalanx of the thumb was performed, etc. Patient was recently dismissed with a very small

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sergranulating wound, however, was
no longer fistulous arrow

NOTE. Since R. Volkmann in his recent article called attention to Tuberculosis of the cranial bones, and drew such a typical picture of the affection, he has received from all directions communications corroborating and confirming his statements, and which go to show that the subject in question has not been overlooked by surgeons to such an extent as one would assume in view of the neglect with which it has been treated in works on surgery. Among the cases coming to the knowledge of Dr. Volkmann in the manner indicated, are two of Ried, of special interest; one of these was published long since in 1842, and has been quoted by Nélaton, who, as is well known, was one of the earliest writers on Tuberculosis of Bones, but who erroneously rendered the name Reid, instead of Ried.

What particularly distinguishes these two cases of Ried (described in *Centralb. f. Chir.* 1880, 19), is the extraordinary intensity and multiplicity of the tuberculous affections; this circumstance is deserving of special notice, since those reported by R. Volkmann are mostly of the same character, indeed, we find but one case in which the affection of the cranial bones existed for any great length of time as the only manifestation of the tubercular diathesis; all the others are suffering from severe multiple tuberculosis, and several have already perished from the same. It seems, therefore, that those individuals in whom is developed the tuberculous affection of the bones are under the influence of an unusually severe constitutional infection.

DR. CARL LANGENBUCH, ON BLOODLESS OPERATION ON THE TONGUE.

(Archiv. f. Klin. Chir. Bd. xxii, pp. 72 and ft.)

By far the greater number of tumors and ulcers of the tongue have their seat in the anterior two-thirds of the body of the organ, and the observations which follow have special reference only to that portion which is limited posteriorly by the line of the Papillae Circumvallatae.

The various methods of operation which have been adopted for the removal of diseased portions of the tongue have aimed either to avoid completely, or limit as much as possible, the profuse hemorrhage which so generally accompanies a wound of that organ. As the oldest

method may be regarded that of ligature *en masse*, according to which the tongue is strangulated by means of ligatures, and the portion thus tied off is left to slough away after removal of all the diseased parts.

Vidal made use of this method quite frequently, and gave precise directions for its execution; but Dieffenbach already condemned the ligature in the most emphatic manner, expressing himself in the classical words: "To mention methods of ligation, in which the diseased tongue according to Biercher, Mirault, and others shall be treated like a polypus,—that would be to concede to an absurdity the place belonging to practical things; suffice it to say that such has been done, and it is not judicious." Modern surgery, at least in Germany, has, as may be supposed, entirely discarded this mode of operation. Dieffenbach practiced his own method; he did not claim to avoid all hemorrhage during operation on the tongue, but satisfied himself with passing a strong thread through the entire thickness of the organ before excising the diseased portions, thus having in readiness a ligature which promptly controls the hemorrhage. It is obvious, however, that even this method of Dieffenbach has its serious drawbacks, for, in the first place, a comparatively large amount of blood will be lost, and the deglutition as well as the introduction of the latter into the bronchial tubes may lead to consequences equally as undesirable. Moreover, it is impossible to secure a distinct view of the wounded surface or recognize whether the diseased portion has been thoroughly eradicated, any such attempt being completely frustrated by the hemorrhage and the consequent necessity of introducing the sutures as quickly as possible.

Recently two methods of instrumental operation have come into vogue, viz.: By the use of Middeldorff's galvanocautic, and by the adoption of Cassaignac's *écraseur linéaire*; each of these claims to do away with all loss of blood, but in this respect even they cannot be entirely relied upon, as is proven by the many cases contained in the literature on this subject. These methods, without considering their complex character, can only be adopted by skillful and experienced operators, otherwise they too may prove very bloody, and in such an event are apt to present wounded surfaces that do not offer the best chances for a rapid recovery; surfaces that have been charred by the glowing-hot wire are

not the most desirable field for the employment of the suture, and the removal of a V shaped portion extending deeply into the body by means of this apparatus, might not be commendable; it might answer for amputation of the organ, but would prove less applicable for the purposes of resection, or rather excision.

The wound produced by the action of the *écraseur* is to be regarded as a contused wound, and not infrequently both during and after operation, troublesome hemorrhages occur, and primary union does not always follow as desired, the process being interrupted by a considerable swelling of the whole organ. Nevertheless, *écrasement* accomplishes more than the methods heretofore mentioned, and is at present the one most generally adopted. But there is another which has of late likewise been frequently practiced, viz.: ligation of one or both lingual arteries before operation, by which procedure the afflux of blood to the organ is for the most part completely suspended; this precaution, however, is not always easy of adoption, and the less experienced surgeon may fail in attempting it, particularly when the neck is very stout or when the lymphatics at the angle of the maxilla are inflamed or swollen by carcinomatous disease. Weichselbaum asserts that the submaxillary gland extends lower down in the aged than in young persons, and calls attention to this fact as one of importance in connection with ligation.

The defects in all these methods appear more striking when we call to mind those points which are of essential importance in any method of operation that shall meet all demands. First of all, that method which presents the fewest technical difficulties must always be the one preferred; secondly, it must be of such a nature that, if possible, not one drop of blood shall obscure the wound. If these conditions are met then the operation can be accomplished without haste, and the desired result can be attained, viz.: the thorough removal of the diseased part; moreover, the patient is not unnecessarily weakened by the loss of blood, and since the danger of the entrance of the latter into the air-passage is excluded he can be chloroformed with all safety. Lastly, the wound resulting from the operation must present surfaces that have neither been crushed nor burned, and that by the immediate introduction of sutures will unite by first intention.

I now proceed to describe an operation

on the tongue in ^{ib} ~~ib~~ I adopt a method devised by myself, ~~ib~~ which may be regarded as fulfilling all the conditions just enumerated.

In the early part of the year 1878 there came into my ward in the Lazarus-Krankenhaus, Berlin, a girl nine years of age suffering from an erectile tumor of the tongue as large as a walnut, situated to the right of the *raphé*, and about midway between its tip and base, though perhaps somewhat nearer the former. The growth presented the well known characteristic peculiarities of the erectile tumor: elevation about the surrounding surface, a purplish, translucent appearance, and irregular surface, erectibility and compressibility; it was covered by a thin attenuated membrane, the atrophied mucous membrane of the tongue. It was the *récidive* of a similar growth which had been removed the previous year in one of the other hospitals of Berlin. Of late, occasional hemorrhages from rupture of the tumor had occurred, some of which had been very profuse, indeed, on one occasion the father was obliged to carry the almost moribund child hurriedly to me at the hospital. The necessity of extirpating the tumor at once in order to save the patient's life was very apparent, and I therefore set about, it without delay; the indication most prominently presented was to avoid as much as possible all loss of blood, and with this aim in view I proceeded as follows:

The patient having been placed under the influence of chloroform, an assistant seized the tongue with a dressing forceps and drew it forth as far as possible; meanwhile, having armed a large curved needle with a long thread of stout, twisted silk, (ligature silk of Archibald Turner, large size) by means of a needle-holder I thrust it through the tongue from above downwards in the median line, and about 2—3 cm. behind the posterior margin of the tumor; then, describing an arc with the point of the needle, I pushed it obliquely in the direction of the inferior maxilla, that is to say, at a right angle to the septum, and penetrating the mucous membrane of the floor of the mouth caused it to re-enter the buccal cavity. By this act I had introduced a loop in which the right half of the tongue and the lingual artery, running along the inferior aspect of its margin, could be included. As the surface of the organ is very slippery, and, favored by the diversified arrangement of its

fibres, possesses the ability to liberate itself from the narrowest constriction, I wished to take the precaution to render my ligature as immovable as possible, and therefore made use of the following artifice:

After raising the point of the needle from the floor of the buccal cavity I caused it to re-enter the tongue near its margin, thus transfixing it from below upwards at a point exactly opposite that at which the needle had been introduced at the median line; by this means one lateral half of the tongue was fixed by the ligature at two points, and slipping out of place after tying was rendered impossible. It is true such a procedure leaves a bridge of tissue which is not included in the loop, but for the purpose in question it may be very narrow, so that the insignificant amount of blood that reaches the wound through this channel is of no consideration.

In precisely the same manner the other lateral half of the tongue was treated. As I have mentioned in my method of Acupuncture-ligation of the Substance of the Lips and Cheeks, (Berlin. kl. Wochenschrift, 1877, 14) so here, I caused the track of the needle at its point of entrance and where it inclined towards the inferior maxilla on each side to intersect that of its fellow, so that for instance, the ligature belonging to the right half of the organ, at its entrance, encroached somewhat upon the left half including within it a portion of its substance; the same, *vice versa*, was true of its fellow. The ends of each thread were now tied, having been drawn as tightly as possible and knotted, so that each lateral half of the tongue, *en masse*, was now encircled by a ligature which completely arrested its circulation, the ends of the threads hanging from the mouth serving as a means to pull forward the organ.

I then removed the tumor with the knife, making a V shaped incision; a few drops of blood oozed from the mass of the tumor, but from the surface of the wound not a drop came. After making sure that no portion of the morbid growth had been left, I applied the necessary deep ligatures, taking care that in tying the same the margins of the mucous surface were well approximated, so as to favor primary union as much as possible, then having cut the constricting ligatures with the scissors, they were removed, and from the closed wound there was not the slightest hemorrhage.

Recovery was as speedy as could be desired; there was no swelling of the organ, and on the third day all the ligatures could be removed.

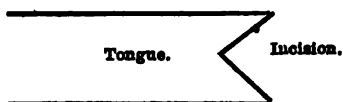
In another case—a papilloma of the tongue of the size of a hazelnut—I was able to complete the operation in a few minutes by this method. The patient, a girl of twenty, was permitted to return home immediately afterward, presenting herself the next day at my clinic according to my order, when the tongue was hardly at all swollen and the wound had already united; the following day I removed the sutures and dismissed her completely recovered.

As to the *modus operandi*, I wish to add the following: If the tumor is situated on the posterior half of the tongue, and it is therefore desirable to draw out the organ as far as possible, very profound narcosis should be produced, so that the muscles inserted into the inferior maxillary bone may be completely relaxed; Dr. Little's method of manipulation should then be applied, which consists in luxating the inferior maxilla downward and forward simultaneously with opening the mouth. This is most easily accomplished by standing behind the head of the patient and inserting the thumb of each hand into his mouth with its palmar surface laid upon the corresponding molars of the inferior maxilla; at the same time the second and third phalanges of the middle finger of each hand are placed behind the angle on either side. If now, with the force exerted by the thumbs to open the mouth there be combined a forward and upward pressure of the middle fingers, (the patient being placed in a recumbent position) the inferior maxilla is thrown forward, and the posterior part of the tongue is rendered much more accessible. (Whether Dr. R. S. Little of England, —later of Shanghai—is the real author of this manipulation (also so serviceable in case of asphyxia from chloroform) can, according to Es-march, not be ascertained; however, Little demonstrated it in Es-march's clinic as early as 1864. Dr. Jacob Heiburg of Christiania had the same idea, and wrote and published a very valuable paper on it in the Berl. Wochenschrift, 1874. No. 42.)

Further, I regard it as of importance to throw a ligature around the two lateral halves of the organ in the manner above described, because, in the first place, such a constriction is more effective and reliable, and secondly, because by such an

arrangement combined with transfixion of the margin all possibility of slipping is excluded; at the same time a means of prehension is secured by which the force of the action is expended more generally in the direction of the width of the organ, and affords by its diverging character a very favorable presentation of the dorsum.

It is obvious that in making the incisions the aim must be kept in view to give the wound such a shape that haemostatic suture is possible; the most favorable are V shaped excisions which therefore if practicable should be preferred to amputations; at the same time they possess the advantage of enabling one to give to the stump of the tongue a good shape and one that most nearly approaches that of the normal organ. If, however, these advantages cannot be utilized, and if amputation is unavoidable, then the horizontal V incision is to be adopted somewhat as follows:



This, as is readily seen, permits of the application of a suture that will successfully control the hemorrhage; such an incision can be easily made by two strokes of the knife, which is made to enter obliquely, and under the protection of the ligatures which encircle the organ all haste may be avoided. The further back the incisions are carried the more liable we are to find on the under surface of the lower flap a triangular shaped wound, at that point where the mucous membrane of the tongue, becoming continuous with that of the floor of the mouth, projects forward; this space can be covered in by drawing together and stitching the very elastic mucous membrane, and if, as a result of the operation, there should be a deficiency of the latter, then inclusion by a ligature, the use of Paquelin's thermocautery, tamponing with styptic cotton, or the application of ice, etc., will undoubtedly suffice to readily and promptly control the capillary hemorrhage, since only hemorrhage of such a character can occur here.

The ideas here suggested owe their origin to the great interest aroused by the eminent writings of my highly esteemed teacher, Prof. Esmarch, on the Establishment of New Fields for Bloodless Operations; if the above article contributes anything of lasting service to surgery—as I venture to hope it may—let the merit be ascribed to Prof. Esmarch, who inspired it.

Purmann in his "Strange and Miraculous Cases of Gunshot Wounds," cites the case of private Siegmund Lorens, who before Stralsund, in 1679, received a gunshot wound through the spleen, and recovered in ten weeks. This unexpected and fortunate cure led Purmann to extract the following one from the *Collegio Curiosorum, Decd. part, Observatio, 195*, by Krüger of Colberg: The mayor of Heinkenhausen, Melchior Sasse, 25 years of age, became engaged in a hand-to-hand struggle with a peasant near Colberg, and falling to the ground received from the latter a stab wound in the left side with a knife; there followed a protrusion of the spleen through the abdominal parietes, which was aggravated by the repeated vomiting with which he was attacked. No one being at hand who could render him assistance, he lay weltering in his blood the entire night. The following morning, by order of the Magistrate of Colberg, the city surgeon, Nicolaus Mathia, arrived and found the wounded man lying in a pool of blood, and the protruded spleen very much swollen; when those who were present saw the severity of the wound, they were surprised to find the man alive.

The surgeon began his treatment by the application of milk and various herbs and ordered that the patient be removed to Colberg. The following day he consulted with another physician, and proposed to him the excision of the enlarged organ; his colleague was opposed to this on account of the formidable character of such an operation. Mathia, however, felt justified in undertaking it, since he could not replace the organ; the patient also assented since in his dangerous condition he was willing to undergo anything that afforded a prospect of relief.

A silk thread was tied around the portion that protruded and by means of this the whole organ was extracted; then tying off the latter with a stout ribbon, the third day he cut away the whole mass. The hemorrhage was arrested by the application of a styptic powder, and appropriate treatment being adopted the patient recovered within three weeks; there remained only a small tumor, consisting of several blood vessels which had become united to the surface of the wound. The patient lived long afterward, and attended to all his ordinary duties.

Dr. Johann Avenium testifies to the facts above enumerated by a certificate of extraordinary length, to which however, we cannot at present devote the necessary time and space.

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COMPLETE TRANSLATIONS VERSUS BRIEF EXTRACTS.

Every surgeon who has performed capital operations will appreciate our translations. It is said that the busy practitioner has no time to read lengthy articles, and this may be true; but let us take, as an illustration, that highly interesting article of our second number: Roser on Three-handed Chiseling; can any of us, however urgent the demands made upon our time, afford to pass by such a production, containing as it does the results of valuable years of experience, recorded by one of the most eminent surgeons of our times, and a classical writer, in concise and simple, though instructive, language? Would it not be an act of barbarism to omit a sentence or leave out a word? Undoubtedly either extreme is undesirable; and we propose to exercise care in the selection of our articles, and not present such as by their length would prove wearisome and tire the patience of our readers. At the same time they shall be represented by complete translation and not brief extracts; how the latter can be a faithful exponent of the author's aims and give a true and comprehensive view of the same, is difficult to understand; perhaps the very points which the writer may desire to emphasize most particularly may escape our notice, and, *vice versa*, what may appear to him as of secondary importance we may regard as of the greatest value and indispensable.

We know, for instance, that some of v. Langenbeck's greatest writings were for a long time unknown, and indeed, many of them still remain so, or at least, have not been adopted; and operations, which have created a whole literature, and are among the greatest achievements of modern surgery, were for a long time ignored, or at all events, not as popular in this country as they merited to be, because the publications of the author were not translated but merely presented in the form of brief extracts, which could never do justice to the subjects of which they treat.

I need only to refer to his subperiosteal

resections, published in the Archiv für klin. Chirurgie, in 1874. These operations are so minutely described, and every word is of such infinite value in order to an intelligent comprehension of them, that it seems impossible to take away any portion without destroying the value of the whole.

This is but one isolated example, others equally as pertinent might be mentioned; but we doubt not that the experience and observation of our readers must have frequently brought them in contact with illustrations of a similar character, and lead them to feel the truth of our remarks.

ALUMINAE ACETAS.

By Dr. A. ROSE, Tarrytown, N. Y.

For a long time I have entertained the idea of publishing my experience with a preparation which I prize most highly, and which I have been accustomed to use in the place of carbolic acid for the last seven years, though the remedy is generally known, having been first recommended by Burow, later by Billroth, and still more recently by v. Bruns, the latter using it in some case instead of carbolic acid in Lister's antiseptic dressings. The history of this interesting remedy is an illustration of the oft repeated observation that really valuable things, notwithstanding the persistency with which their claims may be advocated by some enthusiastic champion, may be for a long time overlooked, while those that are inferior receive fair trials; in presenting this article I hope to contribute something to the elevation of this drug to a more widespread and well merited popularity.

The exact date does not now occur to me, but it was before the year 1854 that the directors of a sugar refinery in Königsburg, Prussia, asked Dr. Reich of the same place to recommend to them a means by which the offensive odor of the putrefying blood used in the process of sugar refining, could be overcome. Dr. Reich's experiments led him to suggest the Acetate of Alumina, which in small quantities brought in contact with decaying organic matter, not only destroyed in a surprisingly short time all putrefying odors, but also suspended as well as prevented the inauguration of all fermentative processes in fresh animal tissues.

Soon after Reich had made his discovery, Burow experimented with the preparation in order to study its influence on the human system; but since Reich wished

to keep secret its use on decaying substances, B. did not publish his observations; in the year 1857 he first gave an account of them before a medical society of Königsburg.

The Acetate of Alumina has long been used in the arts on account of its mordant properties, particularly in calico-printing, and also for the purpose of rendering fabrics waterproof. What we know of its chemistry is not very much, but it would seem that a normal Acetate of Alumina does not exist, which would have the constitution of $6 \left(\begin{smallmatrix} \text{Al}^3 \\ \text{C}^3 \text{H}^3 \text{O} \end{smallmatrix} \right) \left\{ \text{O}^6 \right\}$. The precipitate which we get by the decomposition of the sulphate of alumina with the acetate of lead is probably only a mixture of Acetate of Alumina having the chemical formula, $4 \left(\begin{smallmatrix} \text{Al}^3 \\ \text{C}^3 \text{H}^3 \text{O} \end{smallmatrix} \right) \left\{ \text{O}^6 \right\}$, and free acetic acid.

A concentrated solution of Acetate of Alumina, filtrated with excess of Acetate of Lead, and the lead and sulphur removed, gives by evaporation without elevating the temperature an insoluble Acetate of Alumina $4 \left(\begin{smallmatrix} \text{Al}^3 \\ \text{C}^3 \text{H}^3 \text{O} \end{smallmatrix} \right) \left\{ \text{O}^6 \right\}$ in the form of plate-like scales; from the warm solution there is thrown down a white powder which consists of 2 atoms of water and $4 \left(\begin{smallmatrix} \text{Al}^3 \\ \text{C}^3 \text{H}^3 \text{O} \end{smallmatrix} \right) \left\{ \text{O}^6 \right\}$, and which, digested with 2 atoms of Acetate of Alumina and 200 parts of water gives a soluble salt, free acetic acid, and the hydrate of alumina. A solution of Acetate of Alumina evaporated rapidly at a low temperature separates into the Acetate of Alumina, 2 atoms of acetic acid, and 4 atoms of water; the former, again digested, throws down the hydrate, and has now lost its mordant properties, and can no longer be used in the arts; the hydrate of alumina dried at a temperature of 100° , and containing two atoms of water, is soluble in acetic acid, insoluble in strong acids.

A solution of the Acetate warmed with the Sulphate of Potash at a temperature of only 30° throws down a gelatinous precipitate, $3 \left(\begin{smallmatrix} \text{Al}^3 \\ \text{S} \text{O}^2 \end{smallmatrix} \right) \left\{ \text{O}^6 \right\} + 10 \text{Aq.}$, which is soluble in cold acetic acid; when dried it is hard, semi-transparent, and easily pulverized. A solution of the Acetate and Chloride of Sodium mixed, give a fine precipitate composed as follows:

$\text{Al}^3 \text{O}^3$	44.66%
$\text{C}^3 \text{H}^3 \text{O}^3$	21.96%
$\text{H}^3 \text{Cl}$	5.51%
$\text{H}^3 \text{O}$	25.90%
$\text{N}^3 \text{Cl}$	1.97%

The uncertainty of the method of its preparation, its tendency to decomposition, and the difficulty of obtaining it at a certain, fixed degree of concentration, may have been the reasons why the Acetate of Alumina has not long since attracted more attention among physicians, since, particularly for internal medication, it is desirable that a remedy should be chemically pure and of uniform composition.

Dr. Burow gives the following method for the preparation of the salt:

First, dissolve 10 parts of sulphate of alumina in the least possible quantity of hot water, then 17 parts of crystallized acetate of lead in the same manner, and mix the two solutions while hot; stir well, set aside for awhile and then filter, washing the precipitate, consisting of sulphate of lead, with a little warm water. The clear fluid is now saturated with sulphuretted hydrogen until the odor of the latter is clearly perceptible; then separate with the filter the resulting sulphide of lead, warm until the sulphuretted hydrogen has disappeared, filter again and dilute the filtrate with sufficient water to make the whole measure 48 parts; we have then in an ounce of the solution a drachm of dehydrated Acetate of Alumina.

This solution is a clear fluid of a specific gravity of 1.0392, of a sharp sweetish astringent taste, and with a distinct odor of acetic acid. Evaporated in the open air, it deposits upon glass or porcelain, light, fragile, glassy scales which are perfectly soluble in water and not readily affected by the atmosphere.

Dr. Burow tested personally, by internal administration, the Acetate of Alumina and found that the minimum dose is 20 drops and the maximum 60. On taking 30 drops he experienced a slight sensation of warmth and fulness in the gastric region, which was somewhat increased by an additional dose of 40 drops; on taking 60 drops this feeling of discomfort became marked, and at the same time vertigo and confusion of the senses set in and lasted several hours. As these symptoms always presented themselves whenever he repeated the dose of 60 drops, after having fully recovered from previous

doses, it was evident that they were to be ascribed to the acetate.

Whether any further experiments on the internal administration of this preparation have ever been made or published, I am not aware, but on theoretical principles I think it commends itself for trial in zymotic diseases. Where its external application is intended, it is of less importance to have a chemically pure preparation of the salt than one of definite constitution, and whose degree of concentration can be regulated at will. Since the presence of the Potassium salt is immaterial, solutions of the Acetate of Alumina for external use may be prepared from common alum and Acetate of lead, 16 parts of the latter reducing 1 part of the former; 55 of alum and 31 of acetate of lead are dissolved in cold water, and this process gives an almost complete decomposition of the sulphate of alumina in a nearly concentrated solution.

Externally Burow first employed the Acetate of Alumina in cases in which he wished to destroy disagreeable odors,—cases of extensive sloughing and suppuration; then, after witnessing its beneficial effects on the process of granulation in ulcers of the leg, he tried it for a long time in all cases of the latter character for the purpose of determining in which it was most useful and in which it might be contra-indicated.

In 1857 he reported seventy cases thus treated; he found the remedy most beneficial in the so-called herpetic ulcers of old writers; in such the abnormal secretions were very quickly arrested, healthy granulations made their appearance, and in cases of many years' standing cicatrization took place within a few weeks.

In varicose ulcers the improvement was also very marked at the beginning, but in almost every case, at a certain point, progress was arrested and remained stationary, and concentrated ointments of the precipitates were substituted.

In simple ulcers of the cellular tissue the results were less marked, perhaps, because the remedy is not sufficiently stimulating in view of the atonic character of the lesion.

As to the different forms of ulcers in general, B. found that it is particularly the sloughing condition which, by a methodical application, undergoes the most pronounced change in the shortest time; in such cases the entire suppurating surface must be at first constantly under

the influence of the remedy; according to the depth and extent of the process, thick layers of lint thoroughly impregnated with a concentrated solution, must be applied and changed as often as the characteristic odor of acetic acid has disappeared.

Indeed the most opposite conditions seemed to offer no contradictions to the use of this remedy; in ulcers of an erythritic character it reduced the morbid irritability, while in those marked by torpidity, vitality was stimulated.

Burow also found the Acetate of Alumina of the greatest value in certain forms of skin diseases and intractable secretions of the cutis and mucous membranes; among the former its most striking effects were seen in the various forms of Tinea and similar affections of parasitic origin, destroying the morbid growths more readily and thoroughly than carbolic acid, while offensive perspiration in the axilla and of the hands and feet, as well as secretions of the same character about the scrotum and from the female sexual organs yielded quickly to its use. Among disorders of the mucous membranes some cases of gonorrhoea of long standing were cured, but frequently in this affection the remedy failed, like every other; in using the Acetate in cases of this disease, he did not remove the sulphate of lead, which is precipitated in the process above described for preparing the former, neither did he employ concentrated solutions, but, according to the sensitiveness of the patient, added three or four volumes of water. In recent gonorrhoea he found such injections far superior to nitrate of silver, zinc, or lead solutions.

Finally B. recommends this preparation very highly for offensive breath depending on scrofulous affections, aphthae of the mucous membrane, caries of the teeth, wearing of artificial teeth, etc.; in such cases very weak solutions proved sufficient.

In Ophthalmia the results were unsatisfactory, but Blepharadentis which had existed for years, was cured in a short time by application of the salt.

B. says, and this was in 1857: "I have studied long to comprehend upon what theory we are to explain to ourselves the efficiency of a remedy which has so wide a range of usefulness. No doubt, it belongs among the astringents, but this by no means clears up the matter. The energy with which it opposes the process of putrefaction in organic substances, its

power to attract and destroy the odors which are developed during this process, and the really miraculous manner in which it regulates perverse secretions in the living organism, are peculiarities which are found in no other drug, and for which in the present state of our knowledge we are at a loss to account."

When B. made his report to the medical society of Königsburg he exhibited two cadavers, (children) into which he had injected a concentrated solution of Acetate of Alumina six weeks before; they showed no evidences of putrefaction, and here commends this mode of embalming.

It was not until the year 1874 when the germ theory was established, that Burow found the explanation which he had so long been seeking, and it was Dr. Beneke of Königsburg who demonstrated to him the relation of the Acetate of Alumina to bacteria and vibriones, and thereby the significance of the remedy as an antiseptic.

Beneke showed that when a drop of the Alumina solution was brought in contact with the above organisms, which under the microscope were seen to be in lively action, they were destroyed immediately, with the quickness of lightning. It is a well known fact that to accomplish this with the so highly lauded carbolic acid, a very concentrated solution is required, and even with the latter the destruction of the organisms is by no means so sudden and certain.

Having observed this fact, Burow says: "Are we not justified in inquiring whether there exists any antiseptic which can be compared to the Acetate of Alumina?" And further on: "Would one imagine it possible that, in spite of my labors in behalf of the remedy for so many years, it should not be accepted and introduced into the Pharmacopeia? I repeat again, that for 20 years, during which I have treated all wounds with the Acetate of Alumina, I have seen no death from pyæmia in my wards, where, in small apartments, there were confined on an average five patients who had undergone operation or presented suppurating wounds."

In Billroth's classical work, "*Untersuchungen über die Vegetationsformen von Coccobacteria septica*," the remedy is highly recommended. The author says: "I doubt not for a moment that oft repeated dressings with the alumina solution will secure, at least, equally as good results as those from carbolic acid; it seems to have gone out of fashion on ac-

count of its want of deodorizing power." To this Burow replies: "I am greatly surprised by this remark, since it was precisely the deodorizing power of the remedy that led me to use it for the purpose of destroying the offensive odor of neglected ulcers of the leg."

At the time Burow was still attempting to introduce his remedy, Lister's method came into vogue, and became so popular all over the civilized world that any effort to experiment with anything else was at least regarded as a mere loss of time. The following lines were written by Burow shortly before his death: "It affords me special satisfaction to notice that the fatal influence of the Acetate of Alumina on bacteria was first published in Billroth's work. I was acquainted with this power of the drug long ago, and I requested my friends among the pathologists to confirm this observation, which was no difficult matter to do. Unfortunately, until the present, I have waited in vain for a response to my request, and to present myself again as a champion of the remedy is painful to me."

The researches of Prof. Paul Bruns, of Tübingen, show that the antifermentative properties of the Acetate of Alumina had been discovered already by Gannal in the year 1827, who employed it for embalming purposes. In the following we avail ourselves of an article of Prof. B., which appeared in the Berlin *Klin. Wochenschrift*, 1878, No. 29:

Bruns added to 100 c.cm. of fresh blood, taken from the ox, 50 c.cm. of the following solutions, and left the mixture exposed in open vessels in a warm room: To the first 100 c.cm. of blood was added 50 c.cm. of a 3% solution of the Acetate of Alumina, the whole volume thus containing 2% of the latter. The mixture soon assumed a dark brown color, having after twenty-four hours the consistency of syrup, and after forty-eight hours, of a fluid extract. The mass did not exhibit the slightest changes at the expiration of weeks, or even months, and after this long period of exposure there was no trace of any putrefactive odor, or of the presence of bacteria; this proves that even 2% solutions of the salt are sufficient to protect permanently from decomposition organic substances which readily undergo that process.

To the second 100 c.cm. of blood B. added a 1% solution of Acetate of Alumina, the entire mixture containing 0.66% of the salt, and there was no development

of bacteria for fourteen days, and not until the third week could any be found.

To the third 100 c.cm. of blood a 0.5% solution of the alumina was added, the whole containing 0.33% of the latter, and gradual decomposition took place during the second week. For the purposes of comparison, two more portions were mixed with 50 c.cm. of a Thymol solution (1 : 1000), and the same quantity of a solution of Salicylic Acid (1 : 300); both mixtures already at the end of twenty-four hours exhibited a distinct odor of putrefaction and an abundant development of bacteria.

In another series of experiments there were taken each time 50 grm. of fresh beef which were placed in an open vessel, and in each case, a solution of the Acetate of Alumina of varying strength, added, and the whole kept freely exposed to the atmosphere of a warm room. The sample of 50 grm. of beef treated with 400 c.cm. of a 3% sol. of the salt was found after five months to be absolutely unaltered; the solution of Acetate of Alumina remained perfectly clear without a trace of turbidity or putrefactive odor, and the muscular structure, as shown by microscopic examination, retained its normal character. Two other samples, the one treated with a Thymol solution (1 : 1000) and the other with a Salicylic Acid (1 : 300), were found already on the fifth and tenth days respectively, to be turbid and offensive, and became rapidly and completely decomposed. Bruns, who thus demonstrates conclusively the powerful antiseptic properties of the Acetate of Alumina, observes that it was far from being as well known as it deserved.

Concerning my own experience with the preparation, I can only confirm what has been said by Burow and Bruns. In 1875 I was called to a patient who had been amputated in the lower third of the leg for gangrene of the foot. It appears that the operation had been performed before the line of demarcation had formed, and I found a gangrenous stump, with the bone protruding, closely enveloped in adhesive plaster.

The odor that was developed was terrible, but the moment I applied a solution of the Acetate of Alumina, it disappeared like magic, and did not return. I kept the gangrenous parts saturated with the solution, and as soon as the line of demarcation had formed I resected the stump, and, continuing the above applica-

tion, the patient made a rapid recovery. Since that time I have frequently used the remedy, and cannot speak too highly of its value.

Bruns believed that it should occupy a distinct field in the antiseptic treatment of wounds, where it is far superior to other antiseptics. He recommends it in cases of severe injury, especially compound fractures which cannot be treated by Lister's method, or when it is impossible to render them aseptic by the same; he used continued irrigations of a weak solution of the salt, and says that the results were surprising, and when, in spite of Lister's dressing, the disagreeable odor of the parts could not be controlled, it disappeared at once by the adoption of a like procedure.

A case in point occurs to me that fell under my own observation in 1875; it was a compound comminuted fracture of the tibia and fibula, the result of a kick from a horse. I was called by a younger practitioner to perform amputation, but instead of doing so, at once removed several large and small fragments of bone; during the following months numerous sequestra were also removed, and all traumatic complications were prevented by the constant use of the Acetate of Alumina, the patient suffering very little from pain after the application of the first plaster of paris bandage, which I had rendered water-proof. The periosteum of the exfoliated bone having remained intact, there was developed a sufficiency of new bone to render the leg firm and useful, and, though somewhat shortened and deformed, was after all preferable to even a Palmer limb, at least so my patient thought.

It is well known that carbolic acid cannot be employed on such large wound surfaces as I had to deal with in this case, since solutions strong enough to secure disinfection would have also produced carbolism. Lister's dressing was not to be thought of, for the condition of the limb would not permit of the handling necessary in the frequent changes of dressing.

The strongest solution of the Acetate of Alumina required is one of 3%, which is prepared from 10 parts of alum, 16 of acetate of lead, and sufficient water to make it up to 140 parts; for the purpose of irrigation this may be diluted by from three to six volumes of water, giving a 1% to 0.5% solution. *

REVIEWS AND BOOK NOTICES.

V. v. BRUNS. *Die Amputation der Gliedmassen durch Zirkelschnitt, mit vorderem Hautlappen.* 130 pp. Tübingen. Laupp. Seiten. 8. (Amputation of the Extremities by Circular Incision with Formation of Anterior Tegumentary Flap.)

A consideration of importance in amputation is to secure a well-shaped and useful stump, and therefore such a treatise as the one before us, based on a large practical experience in the method advocated cannot be passed by in silence.

The main features of Bruns' method are as follows: The formation of a single, large, anterior flap is to be preferred, the base of which shall embrace somewhat more than one-half the circumference of the limb, and its length be equal to at least two-thirds the circumference. The form of the flap may be semicircular or quadrangular with rounded corners. The flap is to include the fascia in order to provide for its nutrition, and in some cases, where the latter is intimately adherent to the muscles, a superficial layer of them must also be included. The base of the flap is to lie a few centimeters lower than the point at which the section is made in order that the surface of the stump may be well covered. After making the tegumentary flap as indicated, the knife is carried vertically through the muscles, and as a rule a portion of periosteum is made use of to cover the cut surface made by the saw, not a periosteal flap but a tube, or cylinder, by means of which a complete occlusion of the wound of the bone is secured. Finally, to secure more perfect coaptation of this periosteal cylinder to the fresh and bleeding bone surface, and consequently more prompt union, the sharp margins of the compact tissue must be smoothed and rounded off with the bone cutter.

For the purposes of ligation, B. makes use of catgut, and Lister's antiseptic dressings are applied. He adopts Esmarch's bloodless method in so far as the elastic tube is concerned, but he does not apply the elastic bandage, on account of the well known parenchymatous hemorrhage that so generally follows removal of the tube. The extremity, before making digital compression of the artery or applying the elastic tube, is elevated and centripetal manual frictions are employed, by which means the blood is driven from the subcutaneous veins.

v. Bruns claims emphatically that he was the first to recommend the large an-

terior flap, in contradiction to the current idea, according to which Sedillot, Beck or Teale are recognized as those who first suggested it. Bruns' first publication on the subject dates from the year 1863.

Finally, B. concludes his treatise with a summary of the advantages of his method, emphasizing particularly those of a mechanical character, and the device by which the nutrition of the flap is secured.

TH. BILLROTH, *Chirurgische Klinik, Wien, 1871—1876, nebst einem Gesamtbericht über die chirurgischen Kliniken in Zürich und Wien während der Jahre 1860—1876.* Erfahrungen auf dem Gebiet der praktischen Chirurgie. Mit 12 lithogr., Tafeln und 14 Holzschnitten. Berlin, Verlag von Hirschwald, 1879. 652 S., 8. (Billroth's Surgical Clinic at Vienna, 1871—1876, together with a complete Report of the Surgical Clinics of Zürich and Vienna from 1860—1876. Observations in practical surgery. With 12 lithographic plates and 4 wood cuts. Published by Hirschwald, Berlin, 1879. 652 pages, 8.)

Every yearly report from the pen of Billroth has always been a valuable contribution to literature; the one before us, which has for its basis the former reports of his surgical clinics for the last 16 years, and for its aim, not the preservation of that which is traditional, but the development of better methods and aims, will be received with the interest which it merits. Billroth's works need no recommendation, they are read without that; but in as much as the contents of this work are of such importance and its influence on surgical science will undoubtedly be so momentous, we cannot refrain from some criticisms; such an undertaking we are well aware is difficult, since Billroth's writings, it may be said, are above criticism. One peculiar feature of the work in question which, however, cannot fail to excite our admiration, is the unsparing manner in which he criticizes himself, and we cannot fail to recognize and envy him for his proficiency in this the most difficult of all arts.

Two observations which he makes in speaking of himself are characteristic: "Since I have no talent for adhering to any particular method I fear I shall never be able to view the results of my labors from the same standpoint as my colleagues, and consequently am hardly in a position to draw a parallel. By no means do I presume to say that such a course is praiseworthy or even practical—I merely give the fact as it exists; it is a peculiarity of my character."

A few pages further on, speaking of the minute details of Lister's antiseptic method, he adds: "Considering the defective scientific basis upon which this method rests, it requires an almost fanatic belief in their necessity in order to observe conscientiously all these details. Lister and Volkmann possess the admirable talent of being able to arouse and keep up the enthusiasm for the antiseptic method, and my admiration of their skill in this direction is boundless, although my innate scepticism will hardly permit me to go to the same lengths. I have been too closely occupied with the defective scientific basis of the method to be able from conviction to devote myself to a promotion of its technics; with the lapse of years I have lost too much of the mysticism which so instinctively takes the place of conviction, although it may still be a source of enjoyment to me and I would fain allow myself to be attracted by the same subtle influence; indeed much more that is great and beautiful in every branch of art and science is thus accomplished than by the morbid eclecticism of the pessimist, associated with "poverty of ideas," towards which we incline with advancing years." In the rich and varied contents of this volume every reader can find numerous cases of peculiar interest to him. Among others may be mentioned the following: Billroth proves by statistics that in operating for carcinoma of the tongue, the operation by the mouth after ligature of the lingual artery near the hyoid bone (mortality 18.7%) furnishes much better results than Regnoli's method, (mortality, 61.5%).

Of value to the general practitioner are the comparative statistics of the treatment of scrofulous and cheesy swellings of the lymphatics of the neck. Of 94 cases in which extirpation was practiced three died, (one from secondary hemorrhage, one from erysipelas and one from pyaemia), but of nine treated by parenchymatous injections with solutions of the most varied character, two died (of erysipelas); this gives us a mortality of 3.1% after extirpation, and 22.2% after injection. The section devoted to scrofulous inflammation of the bones and articulations of the extremities cannot fail to excite our interest; the author by his statistics demonstrates how much can be gained by systematical subperiosteal resections.

As to the unfavorable character of the prognosis in caries of the bones and the articulations we are indebted to Billroth

for the most instructive details, and among the large array of statistics contained in his work, perhaps none at the present time are of greater value than those devoted to the mortality of these diseases, which are arranged in the following groups:

	Mortality.
Elbow to wrist-joint... (105 cases)	46.0%
Wrist-joint and hand { 94 " }	39.7 " "
Hip-joint to knee-joint (227 ")	34.6 " "
Region of the shoulder,	
shoulderjoint to elbow (33 ")	34.4 " "
Ankle-joint and foot ... (223 ")	33.6 " "
Knee-joint to ankle-joint (272 ")	27.8 " "

These figures are frightfully high, and our interest is enhanced when we learn that the rate of mortality is markedly increased when suppuration also exists; for instance, in scrofulous Coxitis it advances from 11.7% to 56%, in scrofulous inflammation of the ankle-joint from 0% to 50%.

In view of these figures one is justified in arriving at a conclusion as to the importance of early resection of the joints, and particularly of the necessity of resection on the invasion of suppuration.

The number of joint-resections performed by Billroth in the whole course of his clinical experience appears rather small in comparison with the vast number of cases treated by him; in all there were 103, of which 75 were for caries, (of the shoulder-joint 5, elbow-joint 33, wrist-joint 6, hip-joint 13, knee-joint 12, ankle-joint 6); the result, 73 (resp. 57) cases recovered, is very satisfactory. Comparing the latter with the above statistics of the mortality in scrofulous inflammation of the joints we must at once conclude that resection is fully warranted, and we have reason to hope that the latter operation will assert its superiority over amputation, with its mutilating results.

We conclude this brief extract taken from Hueter's *Deutsche Zeitschrift für Chirurgie*, (to which we confine ourselves exclusively in speaking of new German works) with the critic's remark that there is no surgeon of modern times to whom we owe so much and to whom we are so greatly indebted for scientific statistics as Billroth.—*Editor*.

EXCHANGES RECEIVED.

Western Lancet, San Francisco. A. W. Perry, M.D., W. H. Mays, M.D., Editors.

American Medical Journal, St. Louis, Mo. Geo. C. Pitzer, M.D., Editor.

College and Clinical Record, Philadelphia, Pa.

Richard J. Dungleson, M.D., Frank Woodbury, M.D., Editors.

Southern Practitioner, Nashville, Tenn. G. S. Blackie, M.D., Deering J. Roberts, M.D., Editors.

Medical Brief, St. Louis, Mo. J. J. Lawrence, M.D., Editor.

Monthly Review of Medicine and Pharmacy, Philadelphia, Pa. Richard V. Mattison, Editor.

Detroit Lancet, Detroit, Mich. Leartus Connor, M.D., Editor.

Clinical Record, St. Louis, Mo. Wm. B. Hazard, M.D., Editor.

Medical Gazette, New York. Edward J. Birmingham, M.D., Editor.

Missouri Dental Journal, St. Louis, Mo. C. W. Spalding, D.D.S., M.D., Editor.

Proceedings of the Medical Society of the County of Kings, Brooklyn, N. Y.

Herald of Health, New York. M. L. Holbrook, M.D., Editor.

International Trade Department.

To the Editor of the Int. Surgical Record.

DEAR SIR,—Paré spent much of his noble life in the attempt to learn something about practical leg-making, calling to his aid the best mechanics of his time; because the latter failed in their best attempts, he yielded his favorite experiments in prosthesis, and re-amputated the leg of a certain Capt.—(whom he had mutilated ten inches below the knee to try the use of an artificial leg as we now apply them), at the old point of election, a hand's breadth below the knee. This was done simply because the false leg failed to perform well, not having been well devised and made.

If Paré, after long trials, concluded that he must adapt his surgery to the ignorance of even the leg-makers of his day, how is it that Dr. Herter in his self-admitted ignorance, comes to know what is best, when he does not even venture to describe a modern leg of approved pattern, does not mention the name, or give the views, of a single favorably known inventor of patent legs, while, at the same time, he speaks in unqualified terms of the value of "American legs." Whose legs? "American legs" in 1846 or 1851 meant Palmer's and no other, but "American legs" in 1880, like American clocks, may mean little or much; the last "American leg" may be, compared to Palmer's, what a Waterbury watch (costing one dollar), is to the chronometer of Jergenson, or the time-piece of Vacheran.

When Dr. Herter says "American legs," he means the Palmer leg, which took its position in London, Paris, and Berlin, in 1851. Why then did he not say so? Possibly the well-meaning doctor was not really well enough informed about the history of the art to give the true inventor's name.

In the year 1851, Dr. Palmer was in-

vited to appear before the Société de Chirurgie of Paris, and the great surgeons of France, after ten years of investigation, endorsed it admitting with Paré that not the surgeon but the true leg-maker must decide the matter which Dr. Herter now assumes to settle. The French surgeons were followed by Dr. Gross, the autocrat of the amputation-table, who wrote in his *American System of Surgery*, in 1856, as follows:

Great improvement has of late years been effected in the construction and adaptation of artificial limbs, and there is reason to believe that the inconvenience and suffering occasioned by their use, are more frequently attributable to the misconduct of the surgeon, than to the want of skill on the part of the manufacturer of the substitute. It has been only within a comparatively recent period that operators have hit upon the correct principles of making good and serviceable stumps. Allanson, nearly three-quarters of a century ago, understood the subject much better than it has been understood since, if we except the last ten or fifteen years. He strongly insisted upon a long and well-shaped stump, and exerted himself with great ability, but in vain, to induce the profession generally to follow his example. The happy changes which have lately been introduced into this department of operative surgery, are, I believe, mainly due to the manufacturers of artificial limbs, who, with an ingenuity and a perseverance worthy of so good a cause, have reduced the whole process to one of principles founded upon the study of anatomy and mechanical philosophy. It would be difficult to conceive of any apparatus more beautiful in its construction, or more admirably adapted to the end proposed, than the artificial substitutes of Mr. Palmer, of this city, who obtained the prize medal at the Great Exhibition in London, in 1851.

I subjoin Mr. Palmer's instructions for the formation of suitable stumps in amputations of the leg and thigh, as they are now generally acted upon by the more accomplished operators of the country."

Does it occur to the reader that this was a matter of *long ago*, and that the German is *now* in the field with improvements? Pause again; Palmer, now, in the very best years of his life, is also in the midst of his inventions, having recently taken his best patent for his "Safety Socket," and ten other new principles. And do not forget that Surgeon-General Roth, of the German army, was one of the surgeons composing the Centennial Board, in 1876. This eminent surgeon and his compeers, agreed *unanimously*, that Palmer alone, was entitled to the honorary award, which they gave in the following terms:

"ARTIFICIAL LIMBS, B. FRANK PALMER, LL.D., Philadelphia, Pa.

"For the marked superiority in all the qualities which should characterize instruments of this class.

"They are capable of adaptation to every form of mutilation of the lower limbs; are light, strong, of admirable workmanship in every part, exquisitely modeled and finished, and provide in their mechanism for the most natural imitation of the living limb, while affording adequate and assured support to the wearer.

"The first patent was granted to B. F. Palmer in 1846, since which time, with great perseverance and skill he has added many improvements which have found expression in a variety of patents, but the last is by far the most important, being what the inventor calls a Safety Socket. It is designed to receive a part or the whole of the weight of the wearer on the end of the stump:—a mode of treatment so radically different from the existing ideas and practice, as to merit the rank of a discovery.

"The testimony offered and examined of the complete adaptation of this invention to its application, leaves no room for doubt that this last contribution to the comfort and relief of the mutilated, is the most important of his beneficent labors.

A production which embodies the intelligent effort of a life-time, and which affords the utmost compensation for one of the direst forms of human misfortune, entitles its author to a position in the front rank of the inventors and mechanics of the age.

"The artificial arms of the same maker are ingenious and well made."

A true copy on record.

FRANCIS A. WALKER,
Chief of the Bureau of Awards.

JUDGES.*

American—

C. B. White, M. D., New Orleans, La.
J. H. Thompson, A. M., M. D., Washington, D. C.

Foreign—

W. A. Roth, Surgeon-General German Army.

Dr. Ernst Fleischl, Austria.

Dr. Herter complains of modern beneficiaries and tells us that he met a lazy German, an "ordinary man," to whom a leg had been given by the Government, and asked him, "how he occupied himself at home?" to which he replied, "I don't do anything." Such words shocked the doctor, so that he observed that an ordinary "peg" would have answered as well for that man who, he thinks, was wholly unlike a live Yankee.

American soldiers had artificial legs and arms supplied them by the United States Government from 1862 till 1870; during that period about 9,000 men received limbs gratis. In 1870 the new law was enacted allowing limbs *or their value in money* once in five years, during life. In 1870 about 1,500 took limbs and 8,500 money; in 1875 about 1,000 limbs and 9,000 money; in 1880 it is thought that about 500 will receive limbs and 9,500 draw money. Of these men thousands will go on crutches and pegs,—some will grind organs, many do nothing; a lazy German is not wholly unlike a lazy American after all! But a great government can not stop its progress in works of philanthropy to pull a jointed leg of wood from an unjointed fellow, who once fought on his lazy legs and lost them.

The leather socket for amputation above the knee was made in France till the Palmer leg was introduced in 1851, but the best English leg had a willow socket (for thigh) from the time of Pott, in 1880. The "brake" to stop the knee-motion in the German leg, is the English plan of Pott; Palmer supplanted the "brake" with a tendon in 1846, thus imitating nature. Erfurth's springs seem to copy Palmer's and the tendons of catgut are an imitation of the latter's old plan,—

*NOTE.—These eminent Surgeons—"selected for their known qualifications"—constituted the only regularly appointed Judges of Limbs at the Centennial Exhibition.

his present patent tendon being of silk. The joints are spoken of as "simple hinge joints," which without qualification, leaves the reader to suppose that they are the common joints, which we have found so objectionable as to rule them out entirely for 34 years.

Dr. Herter seems to think it singular that a man can even *stand* securely on a leg with a false knee-joint and goes on at length to show how it is done, as if the thing were a marvel; this reminds us, in America, of our trials in 1846, when we, too, had some doubt as to how it could best be done—when some Yankee put in knee-catches, and others *abducted the bolts to force unnatural lines of gravitation so as to meet the requirement of thighs from which the legs had been abducted!*

Now to see a modern leg-maker so set his "brake" in the knee as to demand a false position for both knee and ankle-joints, takes us back to the time when wooden legs were endured, and one might as soon look for an American carrying the old "Queen's arms" with some spare flints in his pockets, and a box of tinder with the steel scraper for an emergency. With the Palmer tendon in the back of the thigh and leg in lieu of the "brake," it is only necessary to first find the line of gravity from the center of support at the body through the knee and ankle-joints, then give a slight elongation to the tendon to allow the knee to fall back so as to gain the position, to obtain which our German friends have dislocated both knee and ankle.

They are doing precisely what Mr. Pott did in London in 1800; he set his joints thus, and fixed a stop-bar instead of a brake, in the knee.

The matter of "ventilation" was well cared for by Palmer in 1850, perfect provision being made for the same in his legs.

"It is to be regretted," says Dr. Herter, "that Erfurth could not be induced to take a patent." Really we do not see what he could patent, of value, as nothing new is to be discovered in his leg. In America, 150 legmakers appear with their patents, taken between the issue of Dr. Palmer's first, in 1846, and his last.

The whole of these patents are thus summed up by the judges of the Centennial Exhibition:

"The American Patent Office shows a record of nearly 150 patents for artificial

limbs. The Civil War, which caused the mutilation of multitudes of soldiers, and the noble liberality of the Government in making provision for supplying the mutilated with artificial limbs, naturally acted as powerful stimulants to the efforts of inventors to produce substitutes which should command the patronage of the Government. *The mass of these patents are either for crude and ill-considered devices, entirely unfitted to supply properly the want they were intended to meet, or for mere details of improvement on recognised inventions.*

"First, both in time and importance, is the artificial limb of B. Frank Palmer, which was patented November 4th, 1846, and improved by further patents in 1849 and 1852. This leg is more widely known, and has met with more general approval by the profession and the public, than any invention of its class, and for that reason we give the detailed notice and description of it from the great work of Velpeau on operative surgery.

"But admirable as was the Palmer leg of 1846—1852, it remained for the same inventor and manufacturer to surpass even his original triumph by the still more perfect limb which he has now exhibited, and which has secured the unanimous award of this Committee."

Dr. Herter pictures a possible military review of the Erfurth leg men standing in a depot, who might have been formed, (for the gratification of the Emperor on his return from France in 1870) into a "Guard of Honor," when his Majesty appeared,—*but were not!* We fail to see the beauty of the military evolutions, since the "little band" was not out on "dress parade."

The "Palmer Guard" in our late war, fighting on Palmer legs, comprised a large, serviceable battalion, and the army of his patients now would exceed the entire number of men in the American army with General Scott, in 1846, when the latter marched into the city of Mexico.

Would not Dr. Herter have done his countryman a greater service in *gaining* than in *giving* information? It is not to be doubted that he is sincere, and that, had he been fully aware of what had been done in the art outside of Germany, he would not have ventured such opinions concerning a leg which does not in any sense compare favorably with models in Berlin, purchased from Palmer more than ten years since (at a cost of \$1,000), to say nothing of his latest inventions.

ONANY BANDAGE, OF CARL WEND-SCHUH, Dresden. (Illustrirte Vierteljahresschrift der ärztl. Polytechn. 1880, 2.)

The advantages of this male onany bandage for night-wear, consist in its facility of application and the sense of comfort which it affords the wearer, admitting at the same time of free movement of the penis and micturition,—considerations of no small practical value.

It consists of a basket-like structure, composed of fine tinned wire, woven in the manner of a net, with large meshes, its margins, where they come in contact with the body and the thighs being lightly padded, and the whole attached to a belt passing around the waist. The thigh-straps, which are fastened (riveted) to the waist-belt as well as the latter, which can be locked, are made of English bridle-leather, in grave cases of narrow steel springs covered with leather. The size of the basket as well as the outline of its margin, in order to fit well, must be adapted to the shape of the individual himself. The patient applies it by thrusting the legs through the slings formed by the thigh-straps and waist-belt, and the latter is then locked.

THE MICROSCOPE IN MEDICINE.

In the present advanced state of medical science a good achromatic microscope is an absolute necessity in the office of the physician, since cases continually arise in which a correct diagnosis can only be reached by its aid.

But it is unnecessary, for medical researches, to employ a microscope of the most elaborate construction and fitted up, with all the accessories named in an optician's catalogue; a well made, substantial stand, with delicate adjustment, supplied with 2 eye pieces and 2 objectives, will be sufficient for all the ordinary observations the medical practitioner may be called on to make. An objective of $\frac{2}{3}$, $\frac{3}{4}$ or 1 inch focus will be useful as a "low power" in examining opaque preparations or in making preliminary observations of tissues, urine, etc., and an objective of $\frac{1}{4}$ or $\frac{1}{8}$ inch focus will give very satisfactory "high power."

The value of the instrument depends so much on the character of the objectives, that special care should be observed to select those made by well known, reliable manufacturers, and to test them carefully to determine their adaptability to the particular line of work required of them; good

defining power with fine illumination are the prime points of consideration in objectives for physicians' use exclusively. The total outfit, embracing all that is required for satisfactory work, need not cost over \$100.00—indeed a very fair outfit can be had for \$50.00 to \$60.00.

The "Physician's Microscope" made by J. H. McAllister of this city, has proved itself to be admirably adapted to meet the wants of the medical profession, being very well made, compact and convenient in all its details. It is usually sold with $\frac{2}{3}$ and $\frac{1}{8}$ inch objectives, but those of a higher or lower power may be added, and as the stand has the "society screw," the objectives of any American and English maker can be used on this instrument; at a trifling additional cost an "adapter" can be added, enabling the objectives of any of the Continental makers to be used on it.

From time to time new accessories are designed, to fill special purposes or to keep pace with the progress of microscopic investigations. Among the most recent, and of special interest to the physician, we might mention McAllister's "Protector No. 1204," by the use of which an objective can be immersed in fluid without injury to it; this "protector" has been found of great service in the examination of urine, since casts, etc., can be observed with it floating free in the fluid much more satisfactorily than when placed on a slide and pressed out by a thin glass cover.

Dr. Hunt's Gas Slide, No. 1205, is a very simple and effective piece of accessory apparatus for enabling the action of gases on blood, urine, tissues, etc., to be examined under the microscope.

The Freezing Microtome, No. 1344, is the pattern adopted by the Medical Department of the United States Army, and is the best device for bringing any animal tissue into the proper condition for making delicate sections for microscopic examinations. By the aid of a small quantity of Ether or Rhigolene a piece of tissue can be frozen hard in a very few minutes, and then cut into sections and mounted on glass slides, for which purpose the Section Knife, No. 1340, invented by the distinguished physiologist, Dr. Carl Seiter, of Philadelphia, affords the best mode of obtaining highly satisfactory results.

By an oversight, the cut belonging to the article on the Binaural Stethoscope in our last number was omitted, but it can be found in our advertising columns.

THE MOST IMPORTANT PREPARATIONS OF MALT EVER MADE.

Possessing the superior advantages of fluidity, permanency and strength.

FOR PHYSICIANS' PRESCRIPTIONS.

(Old Maryland Brewery, Baltimore.)

Your attention is invited to the following list of Malt Preparations:

PURE EXTRACT OF MALT AND HOPS.

This elegant preparation is submitted to the medical profession as representing a result heretofore unattained in the manufacture of Malt Extracts, being a highly concentrated *Fluid Extract* of proper consistency for mixing promptly with water or milk, yet free from alcohol and not liable to ferment. We claim that it is richer in diastase and in the specific nutriments of Malt and Hops than any Extract in the market. When ever used by physicians it has been pronounced a superior article and its effects most satisfactory.

To mothers nursing, with a deficiency of milk, it is of the greatest service, and as a vehicle for any preparation of Iron or Quinia it is unsurpassed. Retail Price, 75 Cents.

NIEMEYER'S EMULSION,

EXTRACT OF MALT AND COD LIVER OIL.

This preparation contains fifty per cent. of best Cod Liver Oil and the soluble Hypophosphites of Lime, Soda and Potash,—**THREE** grains of the combined salts to the tablespoonful. We have evidences from the experience of physicians and others that it is one of the most easily assimilable and palatable forms of Cod Liver Oil yet introduced to the medical profession. It is a perfect Emulsion, mixing readily with water if desirable and is well fitted for administering to children and persons whose stomachs are too sensitive to retain the simple oil. Retail Price, 75 Cents.

EXTRACT OF MALT AND HOPS WITH HYPOPHOSPHITES.

Three grains to the tablespoonful in perfect solution. Retail Price, 75 Cents.

MALT, WINE AND IRON.

This combination consists of two parts Extract of Malt and Hops, one part pure imported Sherry Wine and four grains to the tablespoonful of Ammonia Citrate of Iron in solution. Retail Price, 75 Cents.

EXTRACT OF MALT WITH CITRATE OF IRON AND QUINIA.

Extract of Malt and four grains to the tablespoonful of the soluble CITRATE OF IRON AND QUINIA. Retail Price, 75 Cents.

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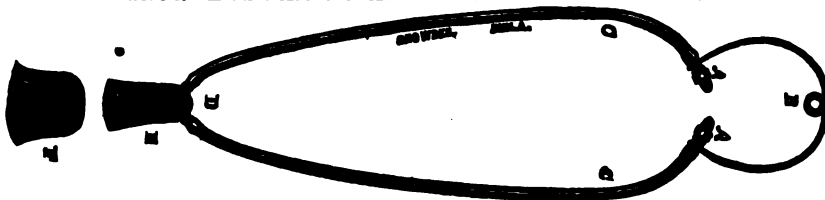
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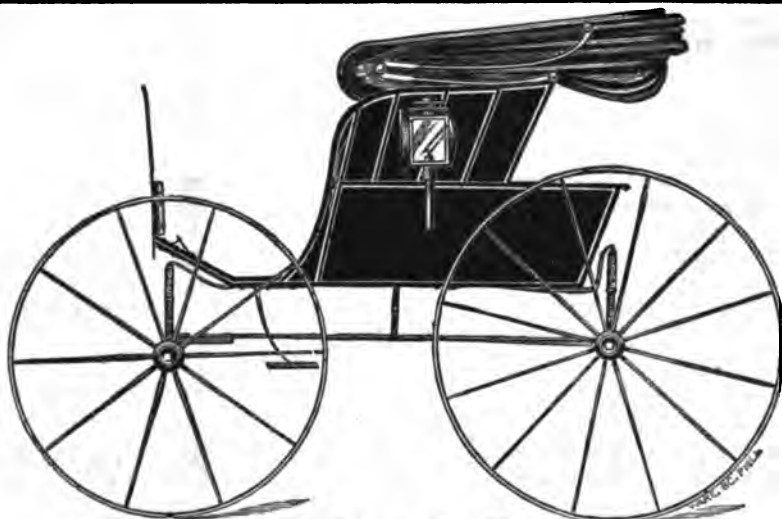
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New York, September 15th, 1880.

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Therapeutischer Almanach für Praktische Aerzte, Bd. 8, 1880. (Manual of Therapeutics for General Practitioners, Vol. VIII, 1880.) By Dr. G. Beck.

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A NEW METHOD OF STOMATOPLASTY FOR THE RELIEF OF TRISMUS RESULTING FROM CICATRICAL CONTRACTION.

DR. CARL GUSSENBAUER.

(Archiv für klinische Chirurgie, xxi. Bd. S. 526—536.)

Recently I had the opportunity of observing in my clinic one of those cases of cicatricial contraction of the inferior maxilla, in which all mobility of both maxillae at their points of articulation, is rendered absolutely impossible, though the latter themselves remain normal.

The method of operation which I adopted in this instance proved entirely satisfactory, and appears to me particularly commendable in this class of cases.

The fundamental idea involved in the operation under consideration, is to replace the lost mucous membrane of the buccal cavity, and since there is already a deficiency of the same, to supply its place as far as possible by integument, thus correcting the contraction and preserving the mobility of the articulations. How these results are to be secured will appear in the report of the case, which I give before proceeding to describe the operation, and it will be readily comprehended that no other of the many operations proposed and adopted for this morbid condition could have accomplished as much.

September 17th, 1876, Delatte Firmin, a boy, 7 years of age, of Warelbecque, Province of Liège, was admitted into my surgical clinic, where I found him with the defect I am about to describe. According to a letter from his physician, he had suffered in May, 1876, from cerebral meningitis, for which he had been treated by calomel in fractional doses; the use of this drug, which was continued for a long time and amounted to a quantity unknown to me, gave rise, notwithstanding the alleged careful cleansing of the mouth, to a severe and extensive Stomatitis with consecutive gangrene of the mucous membrane of both cheeks and the alveoli of both maxillae, and finally partial necrosis of the alveolar processes.

When I first examined the patient, the process of contraction was already so far advanced that, on account of a prolonga-

tion of the commissure of the lips, the mouth appeared fully one-third larger than normal, and the incisors of the superior and inferior maxillae could hardly be separated three millimeters from each other. By this displacement of the labial commissures the naso-labial fold was unusually marked and the movements of the lips much impeded, though their mucous membrane was still preserved and nowhere adherent to that covering the alveoli; the accompanying figure (1) represents very correctly the deformity resulting from the cicatricial contractions.

By examination with the probe I discovered that the necrosed alveolar processes together with the remains of the milk-teeth had not yet been removed, but remained only partially loosened and tightly pressed together in the granulating wound. By a division of the cicatrized parts in both cheeks with the knife I attempted to secure a view of the form and extent of the loss of substance; such an incision, moreover, was indicated for the purpose of cleansing out the buccal cavity which was filled with the products of the inflammatory process, and absolutely necessary in order to extract the sequestra. This preliminary operation was undertaken Oct. 19th; I incised both sides to the extent of about five millimeters, for this was the limit of the cicatricial tissue and included a portion of the Masseter muscle. This done, the maxillae could be completely separated by means of a speculum and the extent of the loss of mucous membrane be accurately examined; there was a deficiency of the latter on each side commencing at the angle of the mouth and extending several millimeters beyond the anterior margin of the Masseter, and, moreover, of the alveolar mucous membrane of the upper jaw from the posterior milk-teeth as far forward as the two middle incisors, below as far as the canine teeth.

After this procedure it at once became clear that the cicatricial tissue extending between the superior and inferior maxillae was the only impediment to the movement of the latter, for the patient could now open and close the mouth very well, notwithstanding that the Masseter mus-

cles were slightly involved in the cicatrix, proving that the function of the latter as well as of the tempero-maxillary articulation remained intact.

I ought to add that I am unable to find the orifices of the ducts of the parotid glands either on this occasion or in subsequent operations, neither did I discover any secretion of saliva from the surface of the granulations; such being the facts, I was led to assume that the ducts had been completely obliterated, although at no time was there present even a temporary swelling of the glands.

The removal of the only partially separated sequestra I did not undertake until November 10th, when they proved completely movable and could be extracted with the dressing forceps without further injury to the parts; from the superior and inferior maxillae on both sides were removed the alveolar processes and such of the milk-teeth as remained, from behind forward, as far as the incisors. On the right side were left two molars, one in each jaw, in the hope that even though their crowns were somewhat corroded and their roots exposed even to their extremities, they might become more firmly fixed at a later period; on the left side remained alone, the last molar, below the first; the remaining molars on both sides were wanting, and also in the sup. maxilla the two canines and lateral incisors.

The alveoli were not completely destroyed throughout, being more or less preserved in the neighborhood of the remaining teeth and altogether wanting where the molars no longer existed; the necrotic alveolar processes were here and there broken down, but at other points the morbid condition was not yet far advanced, particularly on the right side of the sup. maxilla. After the operation above described, the treatment consisted in carefully cleansing out and disinfecting the buccal cavity and improving the patient's general condition.

Since in this case dilation was not admissible, I only permitted the maxillae to be separated sufficiently to make the necessary applications, but as was to be anticipated, notwithstanding the occasional forced extension of the cicatrized parts, the contraction of the latter increased so rapidly that by the latter part of December the maxillae were again rendered immovable and it was impossible to administer nourishment except through the apertures between the closed jaws; it now became necessary to think seriously of

operative intervention for the purpose of re-establishing mobility, but for a long time I hesitated for want of determination, which of the proposed methods of operation for this class of cases I should select, since, in this case, I expected no permanent, beneficial result from any one of them.

The formation of an artificial joint by means of partial resection in continuity, according to Esmarch, or simple osteotomy, as proposed by Rizzoli, could hardly be thought of here, since the cicatrices extended on both sides as far as the corners of the mouth; an artificial joint on either side of the symphysis of the inf. maxilla, even though perfect in its formation, could never permit of the movements of mastication, the most that could be expected would be the ability to open the mouth wider; just as little promising seemed Rizzoli's method of division of the masseters, although it had proved successful in other cases.

Complete success seemed only possible if I could find some way of supplying the deficiency of mucous membrane by a plastic operation, for this, according to my view of the case, was the cause of the functional disturbance. After a thorough study of the end to be accomplished, I mapped out the following plan of operation, which I executed successfully after obtaining the consent of the boy's parents: The repair of the mucous membrane by taking from the integument of the cheek a pediculated flap and, by a process of inversion, making use of the latter to fill up the defect; supplying the resulting deficiency of integument by lateral flaps from the neck and chin, and the simultaneous performance of cheiloplasty to remedy the preliminary division of the labial commissure,—this in a few words is the method of stomatoplasty which I adopted and of which I shall presently give a more minute description.

According to the plan above indicated, the deficiency of buccal mucous membrane was to be supplied from the exterior and the resulting tegumentary defect to be repaired partly by sliding and partly by being left to cicatrize by granulation; even in case of imperfect success of the reparative process no disturbance of function could result, and not even the disfiguration which must necessarily follow could by any means be so considerable as of itself to offer any valid objections to the plan proposed. The method may at first sight appear very complex,

and other objections may be advanced, which, however, after mature reflection, did not appear to me to be insurmountable, though I must glance at them briefly, since upon their value or worthlessness depends the vindication of the operation, particularly since its merit has not yet been tested by experience.

In the first place, it may be contended that the method proposed and adopted by Jaesche, (G. Jaesche, Zur operativen Behandlung der narbigen Kieferklemme, Arch. f. klin. Chirurgie, ix. Band, S. 226) consisting in splitting the cheek, supply of the alveolar mucous membrane by integument from the cheek which becomes united by granulation, and followed by meloplasty would likewise secure free mobility of the inferior maxilla, since the cicatricial contractions could no longer offer their former resistance. Against this method I can only say that it does not repair the defect in the mucous membrane of the cheek, although by supplying the maxillae with integument prevents them from becoming again fixed, and thus partial success must follow.

I am far from seeking to depreciate the value of Jaesche's operation; it may suffice for less extensive destructions, and, moreover, possesses the advantage of less marked external disfiguration than the one advocated by me; I only wish to emphasize the fact that I could not regard it as meeting the demands of my case on account of the great destruction of tissue and in view of my former experiences. These considerations necessarily led me to the conclusion, either to abandon all idea of operation or to devise one that would repair the defect of the mucous membrane itself. As to the latter point, first in order to be thought of, was the transplantation of integument after the other Indian method, in order to cover the granulating cheeks, partially at least, with the resisting epithelial cover, and thus, if not to prevent the contractions, at least, to limit them. Such a procedure could not have resulted in any external deformity whatever, and regarded from this standpoint was to be preferred to every other; remembering, however, the frequent failure of Riverdin's skin transplantations on granulating surfaces, and particularly the fact that, even after weeks, sloughing of the transplanted portions of integument may take place, little could be expected from such an attempt, even if by means of complicated dressings I had succeeded in securing

union of a sufficient number of the grafts, and therefore there seemed to be no other choice but the adoption of some reliable plastic operation; but such an operation upon the mucous membrane was not to be thought of, since the latter was completely wanting except on the lips and hard and soft palate, so that none could be spared from any part of the buccal cavity, and therefore nothing remained but to substitute integument.

But against such an idea it might at once be objected that the epidermis, under the influence of the temperature of the cavity of the mouth and the accumulated secretions, would become excoriated, inflamed and ulcerated, or that there would be deposits about the hairs or in the hair follicles which might also lead to inflammatory complications; but these objections did not appear to me to be valid, for it is well known that the integument about the mouth, when drawn into the latter by cicatricial contraction, accommodates itself very well to its new conditions, even becomes transformed and assumes the character of mucous membrane; moreover, in the operation for epispadias, inverted tegumentary flaps have been employed, and experience has taught that the above conditions can be avoided if the necessary cleanliness is observed, while naturally enough, where the latter is wanting, such complications frequently arise and endanger the success already attained; in regard to the buccal cavity, the precautions necessary to evade these evils could very readily be foreseen.

As a result of these considerations I could see no contra-indication to the operation proposed; the doubts existing in regard to a stomatoplasty, which was to consist of several operations, and whose final result naturally depended upon the success of each of these, did not deter me, since I was convinced that I had correctly solved the enigma, at least from a theoretical standpoint; moreover, these apprehensions vanished *en masse* when I familiarized myself with the plan of operation; therefore, January 9th, I proceeded to perform the following method of stomatoplasty, which was to consist of three different operations, undertaken at different times, and in order to avoid a minute description of the latter I have had them represented by several cuts:

The first operation as illustrated in figures 2, 3 and 4 (below), consisted of three stages. I first dissected up from the cheek on each side a tegumentary

flap, 4 centimeters in width and 6 centimeters in length, which was prolonged back to the anterior margin of the masseter

posterior portions were destined later to take the place of the anterior broader half of the mucous membrane of the cheek;



Fig. 1. Represents the retraction of the labial commissures by the cicatrices within the buccal cavity, before operation.



Fig. 2. Formation of the tegumentary flaps.



Fig. 3. Second stage of first operation. (Division of the both cheeks as far as the masseter muscles.)



Fig. 4. Third stage of first operation. (Uniting the flaps within the buccal cavity.)

muscle, its nutrition being secured by a posterior broad pedicle. In forming these flaps, I took care that they increased in width from before backward, for their

this special detail is of importance, since a large part of the success depends on it. Moreover, I did not dissect up the flaps throughout their whole extent at once,

but merely circumscribed them, leaving them to be completed when the pedicle was divided at a later date, thus making the best possible provision for their nutrition; this was followed by a division of the labial commissures by means of horizontal incisions carried back as far as the anterior borders of the masseter muscles, and involving the whole thickness of the cheek as far as the tegumentary flaps; the third stage consisted in deflecting the anterior margins of the flaps inward and backward over the masseters and attaching them to the mucous membrane which still existed there, by means of the interrupted sutures; on each side six ligatures were inserted, and thus the flaps were secured behind, above and below, in such a manner as to fill up the entire posterior half of the defect of mucous membrane. The whole operation was completed while the patient was under the influence of chloroform, and was uninterrupted.

After-treatment consisted in keeping open the mouth by means of a wooden wedge placed between the two molars on the split-side, in order to protect the flaps from pressure, and in frequently washing out the cavity and applying a simple bandage. Union took place by first intention, and on the fourth day after operation I was able to remove the sutures. I now waited nearly four weeks before proceeding to operation No. 2, so that nutrition of the flap might be perfectly insured.

Operation No. 2, Fig. 5, consisted in division of the pedicles, completion of the inverted position of the flaps, and union of the same to the anterior part of the buccal cavity. I might have completed this operation at once but I preferred to proceed cautiously, and in order not to arrest too suddenly the circulation through the pedicles, decided to employ two sittings. Therefore on February 8th, I confined myself to dividing the pedicles and partly dissecting up the flap from the line of incision forwards, and two days afterward the circulation being completely established I was enabled to complete their detachment, inversion, and union by ligature. But before doing so, I supplied the deficiency of alveolar mucous membrane by a narrow tegumentary flap taken from the margin of the incised cheeks, about in the same manner as Jaesche in his operation for Trismus, due to cicatricial contraction. The results of the second operation were all that could be desired; the movements

of mastication, after completing the suture of the flaps as well as during the four weeks that had elapsed since operation No. 1, could be freely executed, and success was already assured, so far as this function was concerned.



Fig. 5. Arrangement of the detached and inverted flaps in the anterior part of the buccal cavity.

It now remained to supply the external tegumentary deficiency by another plastic operation. I ought to mention here that the latter might have been undertaken eight days after the second, granulation at that time being already well advanced and the general condition of the patient being good, but an inflamed finger prevented me from operating, and therefore it was not until February 28th, that I could proceed further. This third and last operation consisted, in the first place, in freshening the external margins of the wound in the cheek, and then the formation of both labial commissures, and finally meloplasty by means of pediculated flaps taken from the integument covering the inferior maxilla on each side. These flaps were 6 centimeters in length and 4 centimeters in width, and were of nearly the same form as those which had been transplanted into the interior of the mouth. The operation lasted about two hours, and to keep up narcosis 150 grammes of chloroform were necessary; the loss of blood was somewhat considerable, so that, altogether the operation was no trifling undertaking for a seven year old boy; it was followed by a general reaction, with an elevation of temperature to 39.2°C ., which,

however, lasted until only the fourth day. The union of the flaps was not as perfect as desired; although the opposed surfaces united for the most part by first intention, along the margins of the former suppuration occurred here and there, so that the resulting cicatrices were proportionally broader, and the deformity more marked, than I had anticipated. Then too, the labial commissures did not unite by primary union; on the right side the lips became detached from the anterior margin of the flap, and on the left a portion of the fore-part of the flap, about 3 millimeters in width, sloughed away, so that, although the prolabium was normal, the

ment of hairs, obstruction of the follicles, excoriations, etc., I have as yet observed nothing, although, to be sure, a period of three months is too short to enable one to speak positively of any definitive changes in the epidermis of the flaps. In this respect, the case will be of interest for many years, particularly at the time of puberty, for not till then can it be certain whether the hairs of the beard will develop themselves also in the buccal cavity. Until then the patient may be permitted to enjoy his meals undisturbed, which he relishes with so much the more *gusto* since he was obliged to forego them for so long a time.

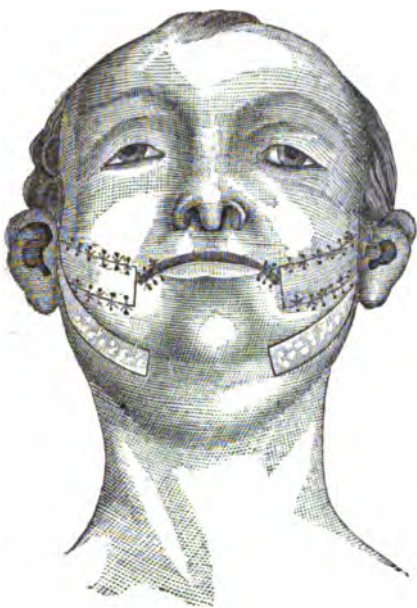


Fig. 6. Operation No. 3, consisting of Meloplasty and Cheiloplasty.

shape of the left commissure was not such as was intended; finally, the right commissure needed two slight corrections, which might be undertaken without anaesthesia, but which I was obliged to defer until the boy had fully recovered.

Notwithstanding the fact that the third operation was not as successful as might have been desired, yet the general result was very satisfactory, for the inferior maxilla is freely movable and the internal tegumentary flaps are in the best condition, and already, not yet three months after the first operation, have become so transformed that their color is of a palish red and their surface appears to the touch much softer and more velvety than the exterior of the cheek. As to the develop-

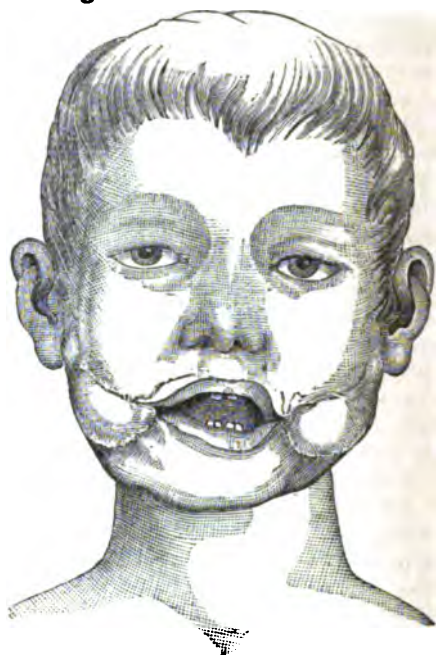


Fig. 7. Final result. The mouth, when open, is somewhat distorted, as seen in the cut; when closed, the retraction of the upper and lower lips disappears.

For the present he must be looked upon as cured, for the wounds have all cicatrized, except a granulating surface about a centimeter in length beneath the right inferior maxilla whence I took the external flap, which, however, is rapidly diminishing in size; of course I shall not fail to keep the boy under observation as long as possible, and report his condition in case any change should occur.

When I consider the results reached, aside from the cheiloplasty which did not turn out as well as expected, it seems to me doubtful whether even as much could have been accomplished as to function, by any other method; at least, none known to me, or proposed or adopted, has had for its object the repair of the

mucous membrane by a plastic operation; upon the fulfillment of this aim, alone and solely depends the success.

(The most complete compilation of the literature upon the subject of operations for lockjaw will be found in the Dictionnaire encyclopédique des sciences médicales, Paris, 1872. Deuxième série, Tome, V. Maxillaire (os) Pathologie, Bibliographie 2, Constrictions des mâchoires, pag. 552.)

It is by no means my intention at present to enter at length upon a discussion of the operations undertaken for lockjaw, but I may be allowed to indicate, in passing, the class of cases in which I think this method of stomatoplasty is indicated and practicable. Where the morbid condition is due to true ankylosis, it is obvious that only a resection of the joints, can re-establish the normal relations, or some benefit may be derived by the formation of a false joint according to Esmarch or Rizzoli. Cicatricial contraction of the maxilla, on the other hand, due to stomatitis mercurialis and other ulcerative processes, or noma and other forms of gangrene, or the result of injuries of any description, it seems to me can be treated by the method above given, in all those cases in which the destruction of the cheeks is so considerable that simple incisions and a temporizing plan of treatment can accomplish nothing,—whether merely the mucous membrane and the subjacent muscular structure are wanting, or the integument be also involved. Ulcerative processes having their starting point in the buccal mucous membrane, very seldom lead to destruction of the integument of the cheeks, and in these cases the same method may be adopted with variations to meet the indications of the individual case; and also, in those cases in which the integument is wanting over a greater extent of surface, as, for instance, is almost always the case after noma, only limited modifications could be possible.

In all such cases that have fallen under my observation, the operation, so far as my memory serves, would have been quite practicable. Of course, when there already exists a deficiency of integument elsewhere, the flaps must be taken from the temples or the neck, a procedure of no little significance in view of the relation existing between their length and their nutrition; but in such cases, in order to avoid the possibility of sloughing of the flaps, recourse could be had to the

method of double pediculated granulating flaps, and then the object in view could be reached, less rapidly, it is true, but with more certainty.

To sum up, I believe I am warranted in assuming that the functional results by a repair of the buccal mucous membrane, will be better than are possible by the formation of a false joint, and it may be added that the operations adopted by Esmarch or Rizzoli for cicatricial lockjaw do not aspire to a re-establishment of the normal movements of the maxillæ, and moreover, as is proven by their statistics of mortality, are far more hazardous undertakings than the most extensive plastic operations. As a result of these reflections, I would suggest that the method of stomatoplasty which I have recommended be subjected to a further trial in appropriate cases.

OPERATIVE TREATMENT OF CONGENITAL TALIPES.

DR. E. RIED, Jena.

(Zeitschrift f. Chirurgie, Bd. xiii. 1—2.)

While in former years the operative treatment of talipes was limited to subcutaneous tenotomy of the tendo Achilles, and in some cases also of the plantar aponeurosis, which, followed by mechanical treatment and the application of retentive apparatus for the less severe cases in children, may be regarded as all that is required, in our day it has very materially extended its range; the advance which has been made seems specially attributable to our more intimate knowledge of the changes in the conformation of the tarsal bones in congenital talipes, of which a critical analysis was furnished by Hueter and published by him in the Archiv. f. klin. Chir. 1863, Bd. iv. p. 133 a. f. The operative treatment of extreme cases of talipes was, according to Bryant's report, (Méd. Times and Gazette, Dec. 7, 1878) first proposed by Little in 1854, who recommended the removal of the os cuboides, which was performed by Jolly in 1857. He also states in the above report that Lund, of Manchester, extirpated the astragalus in 1872.

R. Davy reports that he operated on five cases, in 1874 according to Jolly's method; the result was good though not perfect, and therefore he publishes the experimental researches on the subject which led him to the same conclusions as Davies-Colley. He demonstrates his ninth case by plaster of Paris casts taken

before and after operation, which was remarkably successful.

The subject of resection of the tarsal bones for talipes equino-varus was further discussed by Lund, of Manchester, (who had cured a case by removal of the astragalus), before the British Med. Association, (Depart. of Surgery) and by West, of Birmingham, who besides the astragalus extirpated also the cuboid and scaphoid bones in a young man, aged 23, and secured a like favorable result in ten weeks; he believes that in the future no case of talipes is to be regarded as hopeless, and holds with Davy that in the majority of cases it is necessary to remove a wedge-shaped portion of bone from the tarsus, and not single bones *in toto*, (J. F. West, Remarks on resection of the tarsal bones for talipes. British Medical Journal, 1878, Vol. II. p. 657).

Davies-Colley, in 1877, reported on wedge-shaped resection of the tarsus; he operated in a similar manner for double club-foot in a 12 year old boy, first on the left foot and 3 months later on the right. An incision three inches in length was made along the external border of the foot, and another, two inches in length, from the center of the first and at a right angle to it, which severed the extensor tendons; the os cuboides was removed with the scalpel and elevator, the greater process of the os calcis was sawn off, portions of the three cuneiform bones removed with the bone-cutter, and almost the whole of the scaphoid, a part of the caput tali, and the articular cartilages of the fourth and fifth metatarsal bones extirpated. "Three months later the plantar arch was normal, there was free motion at the ankle-joint, the patient could walk well and even jump and hop, and move the toes without difficulty; at the point where the operation was performed no contraction is visible." (Medical Chirurgical Transactions. LX. p. 11, 1877.)

Bryant, following Davies-Colley's recommendation, resected a wedge from the tarsus in the case of a boy 12 years of age; he made an incision from the tuberosity of the scaphoid bone across the dorsum to the outer margin of the cuboid, and a second along the external border of the foot at a right angle to the first. The extensor tendons were then divided, and a wedge of bone one inch in length was excised from the tarsus, the base formed by the os cuboidis and the apex by the os naviculare, which enabled the foot to assume the normal position; drainage

was established and a rapid recovery ensued, resulting in a well formed and useful, though somewhat shortened, foot with flattened plantar surface, (Medical Times and Gazette, Dec. 7, 1878).

Schede described before the Seventh Congress of the German Society of Surgeons, 1878, a case of wedge-shaped excision from the tarsus. Imitating Davies-Colley, he made an incision across the dorsum, close behind the medio-tarsal articulation, from the margin of the foot to the head of the astragalus, and a second carried forward along the outer side of the cuboid bone; a wedge of bone was then excised $2\frac{3}{4}$ cm. in breadth at the base, and containing the anterior part of the os calcis and the head of the astragalus, the larger half of the cuboid and a small portion of the scaphoid bones; to correct the pointing of the foot, the operation was supplemented by section of the tendo Achilles. The result was favorable, (Vorstellung eines Falles von Keilexcision aus dem Tarsus bei altem Klumpfuß. Verhandlungen der deutschen Gesellschaft für Chirurgie, VII. Congress, 1878. Theil I, S. 76). Meusel also gave, at the same time and place, the history of a case upon which he performed resection of the tarsal bones. He took a wedge from the tarsus directly in front of the ankle-joint, its base turned outwards and the dorsal side still somewhat broader than the plantar, without regard to the articulations of the tarsal bones; shortly after, he operated in the same manner on the remaining foot; the result was better in the latter case than in the former, in which the foot was somewhat shortened.

Hueter in 1877 operated on the clubfoot of an adult, resecting the caput tali and os naviculare, and re-established the function of the joint; he regards as the most rational method the removal of a wedge from the neck of the astragalus, having its base directed outwards, (Klinik der Gelenkkrankheiten, 1877, II. Theil, S. 145, Anmerkung).

I herewith add the history of the operation and after-treatment in three cases which presented themselves during the last year at the clinic of Jena; the object aimed at in each—the extirpation of the astragalus—could only be accomplished in the first and third cases; in the second the plan of operation was changed, and a wedge was excised from the tarsus, since when the astragalus was exposed, bony ankylosis of it with the os calcis revealed itself.

1. Robert Oberränder, 4 years of age, the child of a day-laborer of Schwartzburg.

The patient was suffering from congenital talipes on the right side. A physician, who was called in soon after birth, attempted to correct the mal-position of the foot by subcutaneous tenotomy of the tendo Achilles; a degree of improvement followed, but when the boy began to walk a condition of marked clubfoot developed itself, which had been increasing of late. October 20th, 1877, he was brought to the surgical clinic for operation.

He was healthy, strong and well-nourished. The right foot was strongly adducted and supinated so that the patient walked upon its hypertrophied and indurated external margin. The heel was drawn upwards, the tendo Achilles in a condition of extreme tension, the foot very much hollowed and the toes considerably flexed. The astragalus could be distinctly felt beneath the integument, and the inferior extremity of the fibula, instead of articulating with the outer surface of the astragalus, was displaced backwards and rested upon the os calcis. Since mechanical treatment or a repetition of subcutaneous tenotomy of the tendo Achilles did not promise success, on account of the marked distortion and the diminished flexibility of the ankle-joint, I decided upon operative interference; before proceeding, a cast was taken of the foot.

The operation was undertaken on the 29th of October, 1877, under chloroform, and during the same the carbolized spray was applied. A curved incision was made, beginning behind the malleolus ext. and carried beneath the latter and over the astragalus to the external border of the forepart of the common extensor tendons of the toes; the semicircular flap thus formed was turned upward and the ankle-joint laid open, thus exposing the external and anterior part of the astragalus. The ligaments were then divided, the astragalus seized with the sharp bone forceps, and by a rotation upon its axis gradually loosened from its attachments; since the extremity of the fibula, by striking against the os calcis still rendered it impossible to bring the foot into the normal position, it was resected to the extent of 1 cm., and the parts were then readily brought into proper relation to each other.

The hemorrhage was but trifling, one

small vessel was treated by torsion; the wound was washed out with a 5% solution of carbolic acid, a drainage tube introduced into its external angle, and it was then closed by six ligatures. The dressings, consisting of a silk protective, moist carbol-jute and gauze bandages, were supported by a layer of sawdust; both the leg and thigh were laid in a well padded, Bonnet's wire splint.

Nov. 7th, first changed the dressing; the wound was united by first intention as far as its two angles. Two lateral plaster of Paris splints were prepared, and applied over the carbol-jute dressing.

Nov, 14th, second dressing. Only the external angle still remains ununited. Same dressings applied.

Nov. 22d, a small spongy fragment of bone was removed from posterior external angle of the wound; the drainage tube was omitted.

On the 4th of December I employed a dressing of salicylated wadding; Dec. 10th a plaster of Paris bandage was applied with a fenestra corresponding to the point of operation, which was not removed until some seven weeks afterward, January 28th, 1878, when the parts were no longer painful even on tolerably firm pressure, and the position of the foot was so nearly normal that the boy could stand almost entirely upon its plantar surface; there was free movement at the ankle-joint.

During the following two months he was permitted to walk about on the foot, but the deformity not being entirely corrected by active use, and the tendo Achilles and plantar aponeurosis being still in a condition of tension, the latter was relieved by subcutaneous tenotomy towards the end of March, and a plaster of Paris bandage again employed; he wore the apparatus until June 1st, when the function of the foot was found to be completely restored, and the patient was therefore dismissed.

2. Bruno Pückert, 5 years of age, son of a forester of Ettersburg.

The child was suffering from double congenital talipes, but was otherwise healthy. At the age of 1½ years, the feet had been treated for a long time with adhesive strips, afterward subcutaneous tenotomy had been performed, and finally, an orthopedic apparatus had been worn, but all to no purpose, and May 9, 1878, he was brought to the surgical clinic.

Both feet were in the varus position, the right more marked than the left, its

extremity being strongly adducted and the foot so much supinated that the child walked upon its outer border, or rather upon the outer part of its dorsum, particularly upon the proximal end of the fifth metatarsal bone, the os cuboides and even to some extent the astragalus; over these points the integument was very much indurated. Moreover, the bones of the leg had rotated on the astragalus in such a manner that the malleolus ext. was thrown backward and rested upon the os calcis, the tendo Achilles and plantar aponeurosis were in a tense condition and there was pointing of the foot and considerable hollowing of its plantar surface. The appearances of the left foot were those of talipes varus of medium severity.

Operation on the right foot was undertaken May 25th, 1878, under chloroform and the application of the thymol-spray, in the following manner: An incision of the soft parts, beginning below the external malleolus, was carried forward in a curved line over the projecting astragalus, to the external margin of the extensor tendons of the toes; the semicircular flap thus formed was turned upward—the periosteum being preserved—with the intention of extirpating the astragalus, but the latter proved to be united by partial bony ankylosis with the os calcis, and therefore the plan of operation was changed, and an osseous wedge was excised from the tarsus. In order to facilitate the operation, a second incision was made at a right angle to the first, beginning at its middle and carried forward and outward, thus forming an anterior and a postero-inferior, triangular flap; after dissecting up the latter from the subjacent bones with a sharp knife, from the outer side of the tarsus a wedge was excised, consisting of the head of the astragalus, the anterior articular surface of the os calcis, the greater part of the cuboid bone, and a narrow layer of the scaphoid. The foot could thereupon be brought into the normal position, so that the patient could stand upon its plantar surface.

Two vessels were ligated with catgut, the wound washed out with a solution of thymol, a drainage tube introduced into its inferior angle, after which it was closed by suture, and a thymol-jute dressing applied; to insure the position of the foot, a tin splint, composed of a shank and foot-piece united by a ball and socket joint, was adjusted to the parts and the extremity suspended in a Bonnet's wire splint.

On account of a persistent high temperature and considerable redness and swelling about the wound, on the third occasion of changing the dressing, for the thymol was substituted one of carbolic acid, upon which the above symptoms rapidly subsided. On the 7th of June, the wound was found to be united as far as the position of the drainage tube, and the latter was then omitted. June 12th a small abscess over the scaphoid bone was incised, and all traces of it rapidly disappeared. After discarding the above dressings, considerable pointing of the foot and hollowing of its plantar surface still remaining, August 23d, section of the tendo-achilles and plantar aponeurosis was performed and a plaster of Paris bandage applied; after removal of the latter, September 13th, all deformity was found to have been corrected, but as a precautionary measure, a plaster of Paris bandage was again put on and the boy sent home. The talipes on the left side being much less marked, treatment was restricted to simultaneous subcutaneous tenotomy and the application of a bandage, as above.

According to a brief communication from the father, dated Jan. 19, 1880, the right foot, from which the osseous wedge was excised, is in a much better position than the originally less deformed left, which was subjected to the limited treatment already mentioned.

(The author then proceeds to give a detailed description of case 3, which, however, either as to the general character of the deformity or the mode of operation, does not differ essentially from No. 1.)

The history of the above operations, both on account of the absence of all danger, particularly if strict antiseptic precaution be adopted, as well as the generally favorable results, justify the selection of the operation advocated in the treatment of severe cases of club-foot. It is true, however, that the *modus operandi* may vary, for it is as yet impossible to determine conclusively which may be the more appropriate, since first of all, the material upon which to base reliable statistics is neither abundant enough nor have cases been sufficiently long under observation after operation, to enable us to decide whether the excision of an osseous wedge from the tarsus should be preferred to extirpation of the astragalus, or *vice versa*.

As to the removal of individual tarsal bones, it seems to me that extirpation of

the os cuboides, as recommended by Jolly and R. Davy for extreme cases of talipes, is insufficient; moreover, the pathological changes of shape that take place in the remaining bones do not speak in favor of the excision of this bone alone, since it is particularly the astragalus which by its anomalies of growth furnishes the principal obstacle to the correction of the foot. If the cuboid bone alone were removed the tarsal defect, in severe cases, would be decidedly too small and not established at the proper point, since the elongated neck and head of the astragalus would remain behind and still prove an impediment in the way of success. Neither can I regard as commendable the method of West, who extirpates the astragalus, the os cuboides and the entire os naviculare; such a procedure produces too much of a defect and too great a shortening of the foot, thereby impairing its power of support and its use generally.

In regard to the operation of excising a wedge from the tarsus, the question arises, whether, by the opening of several tarsal articulations and the removal of individual bones and portions of them a relaxation of the arch of the foot may not result, which later will seriously prejudice the success first attained? Further, whether the character of the union which occurs between the resected bones may not also be such as to contribute to the same result at a later period? I say at a later period, since on account of the rapid union of the soft parts, under antiseptic treatment, it is possible that the patient may attempt to use the foot before complete bony union has taken place.

Another point to be decided, is, the size of the wedge to be excised and of what it shall consist. Hueter removes successfully only the head of the astragalus and the os naviculare, and regards as the most rational method the formation of a wedge from the neck of the astragalus, with its base directed outward. (Hueter, *Klinik der Gelenkrankheiten*, 1877, II. Theil, S. 145, Anmerkung.) Davies-Colley on the other hand recommends, as above mentioned, the extirpation of the cuboid bone, the greater process of the os calcis, portions of the three cuneiform bones, and also the entire os naviculare, a part of the head of the astragalus and the articular surfaces of the fourth and fifth metatarsal bones. Bryant's operation, which is less extensive, though the results are favorable, consists of the excision of an osseous

wedge, with its apex in the scaphoid bone and its base in the os cuboides, the astragalus being left undisturbed. I should not fail to add at this point, that, according to our view, although practised by both Davies-Colley and Bryant, section of the exterior tendons should be strictly avoided; indeed, if the superficial incisions are not too ample and the wedge does not include too much osseous structure, there is seldom any occasion for it, since in all cases of severe talipes these tendons are displaced to the inner side of the foot.

The conclusion at which we have arrived is,—as occurred in Schede's case, and in No. 2 of ours above described—that the wedge should be so formed so as to include, on one side, a greater or less part of the astragalus, (the head and it may be a portion of the neck), and in certain cases the anterior margin of the os calcis; on the other, the greater part of the os cuboides and a small portion of the os naviculare, its base being directed outward and its apex reaching as far as, or even encroaching on, the latter bone; in this manner the defect produced will suffice to secure supination in every grade of talipes, while all obstacles to reduction of the foot are removed; at the same time by such a method of procedure, the size and form of the latter are not materially impaired. Concerning Lund's method of extirpation of the astragalus combined with resection of the inferior extremity of the fibula,—adopted in two cases by my father,—it presents these obvious advantages, that besides offering equally as favorable results, much that has already been mentioned as objectionable is dispensed with. In the first place, by such an operation alone can the tarsal arch be preserved, the strength and elasticity of the foot remain normal, and shortening and immoderate diminution in size of the latter be avoided. The bones of the leg, in the normal ankle-joint articulating with the astragalus, when the latter is removed assume a similar relation to the superior surface of the os calcis, and the rotation of the same on their longitudinal axis, as is almost invariably the case in club-foot, by which the lower extremity of the fibula is thrown backward towards the heel, is at once corrected, while when a wedge is excised, the relations of the articular surface of the astragalus with the tibia and fibula remaining undisturbed, such cannot be the case. Moreover, after the operation under considera-

tion, the foot can at once be brought into proper position, and only needs to be fixed by the bandages at a right angle to the leg; recovery is much more rapid since it is not retarded by the slow process of bony union; and another, though not important simplification, consists in the fact that section of the tendo Achilles will be more rarely necessary, since the very loss of the astragalus causes a relaxation of the tendon. As to subcutaneous tenotomy of the latter, it is a matter of indifference whether it be undertaken at the time of operation or later, though perhaps it is better to defer it until the parts have united and it can be seen whether any tension still exists, preventing the patient from standing squarely upon the plantar surface; section of the plantar aponeurosis cannot always be avoided after either method of operation, particularly when the foot is very much hollowed.

As to the indications for operative intervention, I consider the latter as specially called for in cases of extreme talipes, and it is particularly in those occurring among children and young persons, in which no satisfactory results have been secured or can be expected from tenotomy, that I would recommend extirpation of the astragalus in connection with resection of the extremity of the fibula, since after the correction of the mal-position of the foot, by means of a persevering use of the latter, the remaining, soft, tarsal bones will reassume a shape and articular relations to each other approximating the normal, and thus insure an almost perfect correction of the deformity. The excision of an osseous wedge from the tarsus to the above described, limited extent, I would reserve for those cases in which there exists ankylosis of the astragalus and os calcis, (vid. case 2) rendering extirpation of the former alone impossible, or for extreme cases in adults, in which, as a result of complete ossification of the tarsal bones, any change in the form or position of the latter after operation, is no longer to be anticipated, and hence only by such a method can pronation of the foot be secured.

The character of the incisions will depend upon the method selected. For extirpation of the astragalus with resection of the tip of the fibula, the curved incision recommended by my father, from the lower margin of the malleolus ext. across the astragalus to the outer margin

of the extensor tendons of the toes, is to be preferred, since thereby the talus is freely exposed; for the wedge-shaped excision from the tarsus, the most appropriate is a horizontal incision along the external border of the foot as far as the base of the fifth metatarsal bone, from the middle of which a second is carried at a right angle to the first, transversely across the cuboid bone to the head of the astragalus, being similar to those adopted by Schede and affording the best access to the bone about to be resected.

KENIG, ON PROGRESS IN THE TREATMENT OF POTT'S DISEASE.

(Berl. klin. Wochenschr. 1880, 7. Centralbl. f. Chir. 1880, 32.)

The author describes the disease and its treatment. The latter consists in the use of Sayre's plaster of Paris jacket, which, however, he does not describe in detail. Of interest, is his theory that the disease consists, in a Tuberculosis of the Vertebral column, originating in the bones, or perhaps the syndesmoses. Of all mechanical methods the plaster of Paris jacket renders the best service, but nevertheless we must be "modest" in our prognostic estimation of it, since we cannot cure the disease itself by means of the apparatus, indeed, we are even worse off than in cases of tuberculous inflammation of the joints, in which the diseased part can be gouged out or resected.

Worthy of special mention is K.'s mode of treating congestive abscesses. He combines the plaster of Paris jacket with the antiseptic dressings, and opening of the abscess is performed in such a manner that, instead of a broad outlet for the pus, a small, slightly suppurating, fistulous track is established; the latter must be so situated that the pus may have free exit and at the same time the greater part of the long descending canal may no longer be necessary. For instance, in case of a psoas abscess which has already pointed beneath Poupart's ligament, K., in the first place, makes an opening below the latter, introduces the finger, searches his way into the pelvis, presses the finger against the abdominal parietes on the inner side of the anterior superior spinous process, and guided by it cuts down upon it—avoiding the peritoneum—and then reinserts the finger or introduces a pliable metallic probe into the abscess through the last incision and pushes it backward through the pelvis until it can be felt

posteriorly beside the quadratus lumborum, where he makes his third incision. The cavity is then cleansed out, and in each opening is placed a drainage tube of about half an inch in diameter; the lower ones may be removed first, the upper soon shows but little secretion of pus. A plaster of Paris is again tolerated, and is perhaps best made of two portions, which can be buckled together over the Lister's dressings; instead of the softer plaster of Paris, it may be more practicable to employ the magnesia-water-glass bandage.

ON THE BLOODLESS METHOD IN SKIN-GRAFTING.

Dr. E. FISCHER, Strassburg.

(Deutsche Zeitschrift f. Chirurgie. Bd. XIII, 1—2.)

During the past session, as assistant in the surgical clinic of Strassburg, I performed a large number of transplantations on granulating wound surfaces, preceding the operation by rendering the grafts bloodless. As a result, I have arrived at the conclusion that the chances of success are greater than when the usual procedure is adopted, not only union of a greater number of grafts being secured, but in size the latter were on an average much larger, and not infrequently portions of integument as large as the glass disk used in microscopic investigations, rapidly cicatrized.

Aside from the interest of the subject, from a mere theoretical point of view, it seemed to me worth while to examine what would be the result, in case the fresh wound was also rendered bloodless beforehand, and kept so during the performance of the transplantation by means of Esmarch's apparatus. Here I met with even better results than in the former case. In several cases of ulcers of the leg, the entire diseased surface was simply covered with grafts of considerable size, and union of the same was so prompt that there was little or no secretion beneath the dressings; the detachment and sloughing of the horny epidermis,—so frequent an event in skin-grafting,—did not occur, the parts were and remained dry, indeed, there resulted a real *greffe dermo-épidermique*. In other cases entire grafts or portions of them perished, but this was of rare occurrence after I adopted the plan of making in them several minute punctures with the point of a lancet, thus establishing a sort of drainage, and preventing the accumulation of secretions beneath.

As to the general history of the united grafts, it did not differ materially, here, from that observed when the ordinary method is pursued. Sometimes after

several weeks, when the patient had left the hospital, portions sloughed away, particularly when the ulcer was exposed to mechanical injury from the shoe or cold, or when the swelling of the leg was increased by the patient's being on his feet.

As to the details of the operation, in some cases I made use of a limb that had been amputated in the clinic—ordinarily below the knee—and to which the elastic bandage had already been applied and left in place for a quarter of an hour or more, the result of the grafting not seeming to be prejudiced thereby; in others I applied the apparatus immediately before operating. The part from which the grafts were to be taken was thoroughly cleansed with soap and brush, the hair shaved off, a 5% solution of carbolic acid applied, and then dried. The grafts were raised in such a manner as to take away the cuticle without including any of the subcutaneous tissue, the integument being at the same time put on the stretch in order to secure a smooth, clean-cut surface; unless care be taken, it is difficult to obtain grafts $2\frac{1}{2}$ —3 cm. in width without jagged edges, and when such are transplanted the latter are liable to curl up.

In case of the granulating ulcer of the extremity, artificial anaemia is produced by enveloping the entire limb, from the foot high up above the ulcer, with the elastic bandage, the rubber tube being then applied and the latter removed. In putting on the bandage over the ulcer, which is first covered with a silk protective, it must not be allowed to disturb the granulations for fear of hemorrhage beneath the grafts after removal of the rubber tube, and in cleansing the surface of the ulcer before operation, the utmost care must be exercised in order to avoid the same accident. After completing the transplantation, the entire wound is covered with a protective, the latter secured by strips of adhesive plaster, and the whole enveloped with muslin, guttapercha-paper and a gauze bandage; in the case of ulcers of the leg a wire protector is also of service. The dressings are left undisturbed for several days.

As to the age of the individuals, both of those from whom I took the grafts and of those who received them, I paid no attention; among them were persons sixty years of age and more. Before the patient leaves the bed, it is advisable, in case the operation concerns the lower extremity, to apply a porous, elastic bandage in order that there may be no swelling of the limb.

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WICKERSHEIMER'S SOLUTION.

It is a very frequent observation, that when a new remedy or a new method is presented to the profession by some eminent authority, or brought to light with great *eclat*, it is at once adopted on all hands with evidences of the most marked enthusiasm, and the less informed the physician, the more likely is he to be captivated and the louder are his professions of devotion to the brilliant novelty.

We believe in a man being thoroughly in earnest and in his exhibiting his zeal in an appropriate manner, indeed, many of the most valuable inventions of medical science would have died at their birth or have long since sank into oblivion had not some faithful champion stood by them in the hour of peril and advocated their claims with a persistency that could not be resisted, but it is of an immoderate enthusiasm that we speak, of one unwarranted by actual and known facts,—the sooner that such is reduced to its due proportions the better shall we be able to distinguish real merit from mere glare and glitter, and thus prevent a vast amount of mischief.

A preparation that is at present occupying considerable attention is Wickersheimer's solution, and we think on unjust grounds. In the official organ of the German government, the Berliner Staatsanzeiger, Oct. 23d, 1879, (a merely secular paper), Wickersheimer's invention of a new method of embalming was brought to the knowledge of the public as follows: "The curator of the anatomico-zoological Museum of the Royal University of Berlin has invented a new method of preserving cadavers, plants, etc., and the Minister of the department of Ethics, Education and Medicine has published and described it with the understanding that anyone in the German empire is at liberty to make use of it."

If this new method of preservation is to supersede all others the results of its use should of course excel those heretofore obtained and that have been long known and tested, but what are the actual facts of the case?

The formula of Wickersheimer's solution is too generally known to repeat it here, but suffice it to say, this *mixtum compositum* is, according to the results of experiments made by reliable chemists, of such a nature that no effect can be expected from several of its constituents, since they are found in the precipitate formed on preparing the mixture. Prof. Rüdinger, of Munich, had it prepared by a reliable pharmacist of the latter place, in strict accordance with Wickersheimer's formula, and injected the same into 12 cadavers, some of which were entire, others partially dissected; the results were very unsatisfactory. The muscles and the surrounding parts were very moist, the muscular structure soft, and after a short time the putrefactive process invaded all parts of the body. Moreover, during seven years that R. employed a mixture of glycerine, carbolic acid and alcohol he did not observe a case of infection, either in the dissecting room or at the operating table, while during one winter, when he made use of Wickersheimer's solution for cadaveric injection, four cases of infection from dissection wounds occurred, and he remarks that he is not the only one that had met with such an experience. Prof. Langer, of Vienna, saw the same results from the use of the solution, the latter having been sent from Berlin, and the subject, which had even been lying in a cold room, rapidly underwent putrefaction.

Rüdinger concludes that he is not yet convinced that Wickersheimer's solution can protect organic tissues from the former process, that at least better directions for its preparation and application are wanting, than we now possess.

We ourselves desire to express the wish that the German government, instead of commending this agent for embalming purposes, might recognize the value of the Acetate of Alumina, spoken of in a former number of our journal, and we cannot but regret that it has so long been neglected and not even received a place in the pharmacopeia.

Though it is altogether improbable that our wish will be complied with, and the merits of this valuable remedy be recognized by such high authority, yet we venture to express the hope that the simple, cheap and harmless Acetate of Alumina, in many respects the best antiseptic, may be thoroughly tested in our clinics and dissecting rooms.

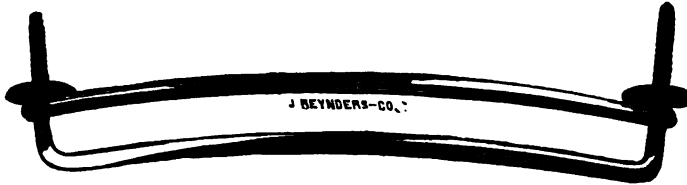
BLOODLESS AMPUTATION OF THE FEMALE BREAST.By H. LEISINK. (*Centralbl. f. Chir.* 1880. 30.)

1. March 1st, 1880, Augusta Josephson, 83 years of age, was admitted into the Jewish hospital of Hamburg, Germany. From her very incomplete history it was learned that the patient more than twenty years previously, had struck the left mamma against the sharp edge of a table; from that time, according to her, a painful swelling had been gradually developing itself, which several weeks before had opened, and from which for the last week there had been a more or less profuse but constant, hemorrhage. She appeared very anaemic and the pulse was very small; in the left, flaccid mamma were two tumors of the size of a goose egg, of tolerably firm consistency, not painful on pressure and adherent to the integument. From one of them, presenting a small open ulcer, situated at the lower margin of the gland, quite active hemorrhage was tak-

as bloodless as possible by elevating it, I applied the apparatus and succeeded in amputating without losing a drop of blood; then after all the vessels that were visible had been seized and ligated, the clamp was gradually loosened, and such others as presented any hemorrhage were treated in the same manner. On removal of the apparatus the wound was closed by suture, and a Lister's bandage applied.

After two dressings the wound united without suppuration, except at two small points, situated at the angles, which did not close at once. By the middle of May having become plump and strong, the patient was dismissed.

2. Jette Holländer, 72 years of age, admitted in May, says that during the last two weeks she has noticed a swelling of the right mamma; on examination the latter was found to contain firm knots of the size of a walnut, tender upon pressure, otherwise the gland was flaccid; the axil-



ing place, which was arrested temporarily by the insertion of several deep sutures, elevation of the mamma and the application of ice-bags. For several days the hemorrhage ceased and then the ligatures gave way, and it was to be feared that the renewal of a loss of blood, even though not of a very profuse character, by its constant drain on the system would kill the patient in a comparatively brief time; on the other hand, amputation of the gland in the usual manner was not to be thought of, for on account of her very much enfeebled condition she could not have tolerated any great, acute loss of blood. However, since the gland was very pendulous, presenting above its glandular structure only a tegumentary duplicate, there was a possibility of being able to apply pressure at this point strong enough to compress the blood vessels, and then to amputate. I therefore had an apparatus constructed, consisting of two metallic bars, one of which, being furnished at each end with a short piece placed at a right angle to it containing a thread, permitted the other to be screwed down tightly upon it by means of a nut.

March 13th, after rendering the mamma

lary glands were not enlarged. May 18th, after careful cleansing, the clamp was applied as in the first case, a small anterior flap formed, and the mamma was then simply amputated. Thus far there was no hemorrhage, and the vessels were now seized and tied, and while the apparatus was slowly loosened others were ligated as their position was recognized; drainage was then established, the wound closed and Lister's dressing applied. Notwithstanding that the patient during the next eight days passed through a siege of pneumonia, the wound united entirely by first intention; on the 11th day the sutures and drainage tubes were removed.

This method of bloodless amputation of the female breast, it is true, is only applicable when there exists, to a certain degree an absence of fat beneath the integument, in such so-called pendulous breasts, however, it may be employed with very satisfactory results, and moreover, at the period when mammary tumors usually make their appearance, or at least come under the surgeon's notice, viz: during the climacteric, there is a disappearance of adipose tissue and the breasts lose their tense, rounded form and

become more or less flaccid ; therefore, I believe that the little apparatus which I here commend may prove of service in not a few cases. Even in clinics, where a large number of assistants are at the operator's command, and where the ligation of the bleeding vessels can be accomplished with comparative rapidity, a saving of blood is desirable, since it contributes to a more speedy convalescence ; of how much greater value it must be to the general practitioner, who is frequently called upon to perform this so frequently bloody operation without sufficient assistance, to be able to render it at least comparatively bloodless. Enlargement of the axillary glands is no contra-indication to the application of the clamp ; the mamma may first be amputated, then the vessels be ligated, and then extirpation of the smaller glands be undertaken.

But the question arises, whether we cannot accomplish as much by apparatus already known ? In the first case above described, I thought at first of applying Esmarch's elastic tube, and to prevent its slipping by transfixing the soft parts with needles, but apart from the fact that a partial slipping could hardly have been avoided and the tube would have thrown the integument together in folds in such a manner as to have rendered it difficult to recognize the mouths of the vessels, my apparatus has the advantage, that while the assistant slowly loosens the screws, the operator can quietly seize each vessel as it shows itself ; it is this very possibility that renders the operation an entirely bloodless one.

REDUCTION OF A STRANGULATED INGUINAL HERNIA BY PUNCTURE OF THE SACK.

DR. ELSTNER, of Landshut, Schlesien.

(Berl. klin. Wochenschrift 1880. No. 9.)

The patient, a married woman, aged 32 years, was attacked October 25, 1878, by symptoms of strangulated hernia ; the following day stercoraceous vomiting set in, and for six days all sorts of domestic remedies were administered for the same and the constipation which also existed, before medical aid was sought. On the seventh day, Dr. Tonn of Jannowitz attempted to reduce the left inguinal hernia which had given rise to the symptoms enumerated ; being unsuccessful he ordered warm baths, enemata, and poultices, and gave an emulsion of castor oil, but all in vain, the patient's condition remaining unchanged.

The next day, November 1st, I saw her with Dr. Tonn and found her very much debilitated on account of the persistent vomiting and abstinence from food for eight days ; the pulse was small and frequent (100), and the temperature in the axilla 30° C. I attempted the reduction of the hernia, which was about the size of a hen's egg and tensely distended, but without success. We dispensed with the use of chloroform since the extremely relaxed muscles of the patient offered no perceptible resistance, and because of her feeble condition ; also, mainly for the latter reason, we did not believe that herniotomy was justifiable, and therefore, as a last resort, determined upon puncturing the tumor with a fine trocar, for the purpose of reducing its size by an evacuation of the liquid or gas.

Dr. Tonn held the swelling in a fixed position while I inserted the instrument to the depth of about 1½ cm. ; on withdrawing the stilet about two tablespoonfuls of a bloody, watery fluid was at once discharged, the tumor collapsed and the protruding portion of intestine could be distinctly felt, and could now be readily returned to the abdominal cavity. But the question now arose, whether this might not have been a reduction *en masse* ? To determine this, an emulsion of cod-liver oil was again administered and an enema of salt water given ; for the first time in eight days the stomach retained the liquid and the bowels moved repeatedly. From that moment vomiting ceased, and the patient recovered speedily without further accident.

Though such a method of reducing incarcerated hernia may be regarded as very unreliable, since an internal strangulation may be the result, the above case may illustrate the advantage of puncturing for the purpose of emptying the hernial sack, and thus reducing its size in cases where all other means fail, particularly since the operation, when performed by means of a fine trocar, may be regarded as harmless.

PROF. BUSCH ON CARBOLISM.

Remarks made at a meeting of the Niederrheinische Gesellschaft für Natur- und Heilkunde in Bonn, December 15th. 1879.

Of late, the attention of surgeons has been frequently directed to the deleterious effects upon the system of the absorption of external applications of carbolic acid. As a rule, a fatal result is rare, so that the benefits arising from the intro-

duction of the antiseptic method into surgical and gynecological hospitals are still very great, comparing modern results with those of former decades. In the surgical clinic of Bonn, where,—excluding the preliminary experiments made on a small scale,—we have practiced Lister's method in all its details for the last seven years, we have been spared until very recently any fatal case of carbolism; dark carbol urine, it is true, has been frequently observed, but this symptom, provided the general condition of the patient is good, is not alarming; probably this dark substance is only the phenol in another state of oxidation, similar to those changes of color observed in substances related to it. In ordinary cases the small quantity of phenol absorbed is secreted with the urine unnoticed, because uncolored, while in others the smallest trace is at once recognized by its olive-green color.

At first we adopted the precaution whenever these symptoms manifested themselves, of substituting the salicylic acid spray for the carbolized, on changing the dressings, and exchanged the carbol dressings for the salicylated cotton; more recently, such patients, so long as their general condition remained good, were simply placed under strict surveillance and the carbolic acid only discontinued when a feeling of general discomfort, headache and nausea were experienced. I do not recollect to have witnessed a severe case of carbolism in which coma, convulsions, vomiting of black masses and alvine discharges of the same character and great sinking of the pulse were all present. The slight symptoms above mentioned disappeared regularly after a few days when the application of the poisonous agent was abandoned. I ought to mention in passing, that we have found Glauber's salts, so much lauded as an antidote, of no particular value; in those cases in which it was administered, the symptoms did not disappear any more rapidly than when, with the exception of the discontinuance of the carbolic acid, no active therapeutic measures were employed; in some cases, in which, on account of the cleansing out of large cavities, more extensive absorption of the acid was to be anticipated, as a prophylactic measure the remedy was given some days beforehand, but nevertheless, in some instances, carbolism manifested itself.

Not until quite recently have we had the misfortune of meeting with a fatal case of carbolic acid absorption. A boy,

five years of age, had for several months been under treatment for coxitis, part of the time as an inmate of the hospital, and part of the time as an out-door patient. The flexed leg had been extended by the gradual application of weights, and had been kept in this position by means of a water-glass bandage; with the latter, the child, who felt perfectly well, had been at home for eight weeks, but when, on his return to the hospital, it was removed, an abscess was found below the great trochanter which rapidly increased in size; it was determined to make an incision, and if, on examination, the condition of the parts warranted it, to resect the head of the femur.

The abscess having been laid open, in its posterior wall was found a fistulous opening leading into the joint, but since no considerable defect of cartilage could be felt by the touch, and since, moreover, the limb was in a tolerably good position, the idea of resection was abandoned; we proposed first to attempt to secure healing of the abscess in such a manner as to reduce the fistulous opening to a minimum, therefore, the walls of the abscess were scraped out with a sharp scoop, a couple of drainage tubes were inserted, the wound closed, and a Lister's dressing in the form of a spica, applied. I desire to especially emphasize the fact, that on account of the "leuco-phlegmatic" habit of the child we did not wash out the cavity with the usual 5% solution of carbolic acid, but that the little patient was only during the few minutes occupied by the operation exposed to a 2% carbolized spray, and afterward to the influence of the carbol-gauze dressing.

During the first day, on recovering from the narcosis, the child vomited, but the symptom was attributed to the effects of the chloroform, otherwise his condition was normal during the first 24 hours; the following morning the dressings were changed under spray and nothing was discovered that could have excited any suspicion; during the day, however, the little fellow was restless, ate nothing and was troubled with nausea. Towards evening carbol urine was passed, and at the same time symptoms of collapse made their appearance; the pulse became very small and rapid, and the temperature sank to 35.5 C., followed by vomiting of black masses, and liquid, dark-colored stools. It was impossible to administer anything, for the child rejected everything

that was taken into the stomach, and we therefore gave him hypodermic injections of ether and applied warm bottles to the body, after removing the dressings without delay; at one time it seemed as if he would rally, as the pulse improved somewhat, but it was a delusive hope: 50 hours after operation death ensued. There had been no convulsion, and consciousness remained unimpaired until the last moment. With the exception of the inflamed hip-joint, the autopsy revealed nothing characteristic.

I regret that the dark masses vomited and passed by the bowels, were not collected and subjected to a closer examination, because I had an impression that they were colored by decomposed blood; during the excitement caused by the unexpected sequel to an operation that had been performed on innumerable occasions with the best of results, (patient was the only child of a widow) their preservation had not been thought of. It is to be hoped that future experiments on animals will clear up this point.

Among the nine cases of carbolism reported by Billroth in his "Chirurgische Klinik," of which some were fatal, others merely threatening, the first resembles the above in an extraordinary manner, in so far as, in both cases, the operation performed was of itself an insignificant one—the opening of an abscess—and on both occasions the patient had been subjected to contact with only a relatively small quantity of the carbolic acid; after capital operations, lasting for hours, during which a large wound is continually exposed to the finest carbolized spray, or after the washing out of large cavities, whence absorption may more readily occur, symptoms of poisoning are less marvelous.

A parallel may be drawn between carbolic acid and chloroform thus far, that certain quantities of either introduced into the system will poison and produce death, while in ordinary medicinal doses the effects are, as a rule, entirely beneficial, though there are particular individuals, who for reasons as yet unknown, are so extremely sensitive to these drugs that they are poisoned by such small quantities as are readily tolerated by others, without the slightest disagreeable symptoms.

As to carbolism, we find that severe cases of a threatening or fatal character occur without any premonitions; the dark color of the urine will excite cau-

tion, but as we have already observed it is very frequently a harmless symptom, and in cases of the above character, poisoning is only first recognized by the suddenly developed collapse, and it is not until the latter has manifested itself that the sinking of the temperature so constantly present is revealed, so that neither is this symptom of any value by way of diagnosis; moreover, in some cases death ensues without any reduction of temperature below the normal. The clinical picture of carbolism is on the whole not a fixed one. Coma and convulsions, as we recognize them in experiments on animals, are, it is true, in the most cases, present, they may, however, be wanting, as in ours, where only great restlessness and jactation were observed.

AMPUTATION AND STUMPS.

I.

(Extracted from M. Wahl's Remarks on the subject of Amputation, and P. Gütterbock's Clinical and anatomical studies of some forms of conical Stumps.)

The subject of amputation has always excited the greatest interest both in ancient and modern surgery, and the controversy on this subject, which is by no means concluded, occupies itself mainly with two points, viz: First, the healing process and its complications, which not infrequently endanger the life of the patient; secondly, the imperfect condition of the resulting stump, which may prove an obstacle to the substitution of an artificial limb for the lost one, or at least render it difficult.

In the course of time, there have been suggested many methods of fulfilling as completely as possible the aim of amputation, viz: to save the life of the patient by removal of the diseased member, and to enable him by means of an artificial apparatus, to re-establish the function of the lost part, at least, as nearly as such can be accomplished by art. All these methods were intended to secure these objects in one way or another, but if we ask ourselves the question to-day, what have been the results of these endeavors in these directions, we must confess, judging from the many badly formed and useless stumps in existence, that they are very unsatisfactory. Billroth says quite correctly, (Surgical Letters from the Field Hospital, 1870—1871), "One of the greatest impediments in the way of the progress of our science and art is the inability of controlling the final results of this comparatively simple operation, (amputa-

tion), one in which no vital organs are injured."

To cover the bone and to obtain a useful stump, its extremity was provided with a thick muscular cushion for the purpose of giving the parts a better shape and to avoid the annoying symptoms of pressure which so frequently occur at a later period as a result of the prosthetic apparatus; numerous suggestions have been made in this direction, circular, funnel shaped, oval and oblique incisions and flaps have been adopted, but it was soon discovered that the thick covering of the stump was not permanent but underwent atrophy after a longer or shorter period.

Tegumentary flaps of greater or less dimensions with circular incision through the muscles were tried, but atrophy of the former where they covered the surface of the bone was unavoidable; next, osteo-plastic methods were advocated; and practiced by Szymanowski on the elbow, Gritli on the knee, and Piragoff on the ankle-joint, but only the latter was successful.

A procedure that has proved of singular value, both as respects the process of union and the improvement of the stump, is the subperiosteal method,—it might properly be called periosteoplasty, the periosteum being preserved and made use of. According to Ph. v. Walther, the former was at first transplanted to the cut surface of the bone; it is said that the danger of osteomyelitis with consecutive pyemia is avoided by such a union with the medullary substance, while v. Langenbeck declares that when the periosteum is left in connection with the superjacent soft parts, gradual atrophy of the bone and integument is best prevented; moreover, sloughing of the anterior flaps in consequence of necrosis of fragments from the wounded bone surface, which more than anything else imperils the usefulness of the stump, is also not met with. Gehmann's experience (*Deutsche Klinik*. I. 1859) shows that after subperiosteal amputation, from the flap is formed an osseous mass which assumes a rounded, spherical shape, thus securing a stump which will bear the weight of the body, since there are experienced none of those symptoms of pressure which are present when the stump is covered with the soft parts only; as another advantage, a shorter duration of the healing process is claimed for this method. If the circular incision is adopted, which is especially practicable in the

case of the humerus and the femur, the periosteum is separated from the bone on a line with the soft parts, and drawn back with the latter when they are retracted.

Neudörfer and Lehman recommend the formation of anterior and posterior flaps of periosteum, to be left connected with the soft parts, and perform the operation similarly to the sub-periosteal resection, but the procedure is of a somewhat complicated character. B. v. Langenbeck recommends a combination of the English method of an anterior flap—which has been practiced in England since 1861 and is warmly advocated in Germany by Es-march, Billroth, v. Bruns and Wagner—with periosteoplasty and gives, particularly for amputation of the femur the following directions: An anterior tegumentary flap is to be formed, whose base is somewhat larger than half the circumference of the thigh; without the necessity of stretching, it must be brought into perfect apposition with the surface of the wound, and must be large enough, after having been attached to the integument behind by sutures, to perfectly cover the extremity of the limb; the muscles are then detached from the bone and the periosteum incised laterally and dissected up; the posterior incision is carried obliquely down to the bone. The sutures must be so applied that perfect approximation of the anterior flap with the posterior margin of the wound is secured, but in such a manner that an outlet for the secretions remains. Necrosis of the extremity of the bone has not been observed by this method, a result that can be anticipated on theoretical grounds.

With the union of the periosteum—which has remained connected with the soft parts—to the cut surface of the bone, besides the non-occurrence of annular necrosis another great advantage is to be noted, viz.: that in a large number of cases, retraction of the tegumentary and muscular structures is not so frequent an event, impairing as it does materially the form of the stump, and being prevented by the above arrangement; moreover, the threatened formation of a conical stump is less to be feared. Lehman had occasion to notice the bony masses of semi-spherical shape on the wounded bone surface above described, which had also been predicted by Neudörfer; such a condition secures a direct point of support for the stump when an artificial limb is applied, and is a marked advantage in favor of this method.

The latter authority and v. Langenbeck also emphasize the fact, that periosteoplasty permits us to amputate at any point on the limb, except when gangrene of the integument is present; this is certainly a great consideration since the danger to the life of the patient is increased with every line that we recede from the distal extremity, while the advantage of an additional length of stump is apparent.

In consequence of the failure of Gritti's method—an osteoplastic operation intended to give a better stump, but where lateral dislocation generally occurred,—and, moreover, of the bad results of disarticulation of the knee, which has of late been recommended by Billroth, Heine devoted his attention to amputation through the condyles of the femur, which has been but little practiced in Germany; after section of the condyles he forms a large anterior flap, including the periosteum of the patella, which is united with a larger one on the posterior aspect of limb, bringing the cicatrix in the latter position. By sawing through the epiphysis of the femur the danger of osteomyelitis is lessened, no medullary canal being exposed.

The dissection of the periosteum from the patella is often difficult, since the latter cannot easily be fixed, and indeed sometimes cannot be accomplished at all, especially when the patella has been shattered into fragments by a bullet or some other missile; as valuable as is the preservation of the periosteum it does not appear of the same importance in this operation as in amputation of the diaphysis,—the cut surface of the condyles being as a rule, club-shaped and therefore the peculiar rounded new formation of bone which serves as a point of support in that case being of less significance here,—though it should be attempted when possible, since, thereby, notwithstanding there is no medullary canal to close, there is less liability of retraction of the soft parts and none of atrophy of the extremity of the bone.

Terrillon, on Polypoid Vegetations of the Female Urethra, as a Symptom of Tuberculosis of the Urinary Organs.
(*Le progrès med.*, 1880, Nos. 6, 7, 8. *Centralbl. f. Chir.*, 1880, 19.)

According to the view of Terrillon, the polypoid vegetations which are found at the female meatus urinarius, may be arranged with reference to their etiology into two classes. To the first, and, indeed,

the most numerous, belong those that are idiopathic, which frequently appear after any slight irritation; their prognosis is favorable, removal leading to rapid recovery; in the second may be included those, which although presenting the same external appearances as the former, are either coincident with, or premonitory of, tuberculous affections of the urethra or bladder, and constitute an important symptom of these affections themselves. Their prognosis, considering the constitutional vice, is unfavorable; treatment affords no, or only temporary, relief.

T. met with four cases of the latter class; in two of them an autopsy was made. He aptly compares these growths of tubercular origin to the polypoid granulations which make their appearance in the tuberculous larynx along with ulceration.

DR. MEUSEL'S REPLY TO DR. R. VOLKMANN.

In the first number of the *International Surgical Record* there appeared an article, "E. Meusel and R. Volkmann on Osteotomy subtrochanterica," in which the latter criticises the former's method of resecting. Dr. E. Meusel has sent us a reply to Dr. Volkmann, which appeared in the *Deutsche Medicin. Wochenschrift*, No. 12, 1880, and of which the following is a translation:

"What Herr Volkmann says as to the greater or less possibility of causing necrosis by the osteotome or the chisel, can only be applied to the cut-surfaces and not to the entire portion of bone situated above the point of excision, and it was the latter which was concerned in my case. Since Herr Volkmann compares the jarring caused by the chisel with that resulting from a fracture of the neck of the femur, I wish to remind him that the conditions of nutrition in the case of an ulcerated, luxated and ankylosed femoral head differ widely from those present in a fracture of the neck of the femur, however severe.

Herr Volkmann observes: 'What we call necrosis of bone,—the death of a portion and its pathological separation—always involves the co-operation of some septic matter.' I do not contradict this, but in the case of a hip-joint which has been the seat of suppuration, though it may be apparently restored, we cannot positively exclude the possibility of the presence of septic matter which thus far has only remained latent. For good reasons we avoid any unnecessary jarring of

a healed fungoid joint, fearing thereby to arouse to activity any septic germs that may be imbedded in the cicatricial tissue.

In nearly all osteotomies I employ the chisel; in the very paper from which Herr Volkmann quotes, I mention two in which I made use of the latter instrument, but nevertheless, in a case such as the one in question, I regard the use of the osteotome as justifiable."

E. MEUSEL.

REVIEWS AND BOOK NOTICES.

MAURICE JEANNEL. *L'Infection purulente ou Pyohémie. (Purulent Infection or Pyemia.)* Paris, Baillière et Fils, 1880. 531 S.

The surgical society of Paris gave as the subject of a prize essay: "Histoire des doctrines relatives à la pyohémie ou infection purulente," and to the above work of Maurice Jeannel the prize was awarded.

It contains the most complete and exhaustive history of septic infection that, so far as we are aware, has ever been offered, and it also gives at length the authors own independent views. The résumé at the end of the work aids the reader in his review of the definite and irrefutable facts derived from a chaos of experiments. The German publications on the subject, which form by far the greater part of the literature quoted, receive greater recognition and more minute consideration than is generally the case in French literary productions.

(The work itself not being at our disposal, we avail ourselves of the above criticisms found in the *Centralbl. f. Chir.* 1880. 31.)

IN THE BERLINER KLINISCHE WOCHENSCHRIFT, No. 16, 1880, F. Beely, in his paper on articulated plaster of Paris bandages in the treatment of diseases of the spine, enumerates as follows all the literature which has appeared on Sayre's plaster of Paris Jacket, or modifications of his method of treatment of curvatures of the spine:

L. A. Sayre, *Spinal Disease and Spinal Curvature; their Treatment by Suspension and the Use of Plaster of Paris Bandage.* London, 1877.

Berkeley Hill, *Lancet*, Febr. 2, 1878, (Med. Soc.)

W. Bernard, *Dubl. Journ. of Med. Sci.*, Sept. Art. VIII., 1878.

W. Bird, *Brit. Med. Journal*, July 6, Sept. 21, 1878.

Coover, *Phil. Med. and Surg. Rep.*, April 13, 1878.

Sampson Gamges, *Lancet*, July 13, 1878.
Bradford, *Boston Med. Journ.*, May 30, 1878. (*Deutsche med. Wochenschrift*, No. 18, p. 225, 1879).

Hueter, *Klinik der Gelenkkrankheiten*. III., p. 184, 1878.

B. v. Langenbeck, *Verhandlungen der deutschen Gesellschaft für Chirurgie*, VII., p. 20, 1878.

L. H. Ormsby, *Med. Press and Circ.*, July 24, Aug. 7, 1878.

E. Owen, *Med. Presse u. Circ.*, Dec. 1878.
Brit. Med. Journ., Dec. 7, 1878.

Parker, *Brit. Med. Journ.*, Jan. 5, 1878.

Pixis, *Edinb. Med. Journ.*, Sept., 1878.

Puel, (*Thèse de concours*) *Du Mal Vertébral*, Paris, 1878.

Rafinesque, *Gaz. Med. de Paris*, No. 32, 1878 (also,

Duplay, *Arch. Gén. de Méd. Arr.*, 1878.)

L. Swan, *Med. Press and Circ.*, July 24, 1878.

W. Thompson, *Glasgow Med. Journ.*, Sept., p. 104, 1878.

Walker, *Lancet*, Dec. 28, 1878.

Willet, *St. Bartholomew Hosp. Rep.*, XIV., 1878.

Med. Soc. of London, Lancet, Nov. 23, 30, 1878.

Brit. Med. Jour., Dec. 7, 1878.

Fr. Dornblüth, *Die Scoliosen (Volkmann's Sammlung klinischer Vorträge, No. 172, 1879.)*

Madelung, *Berl. klin. Wochenschrift*, No. 5-6, 1879.

R. E. Power, *Hosp. Gaz.*, March 22, 1879.

Wyeth, *New York Hosp. Gaz. and Arch. of Clin. Surg.*, Jan., 1879; (*Centralbl. f. Chir.*, No. 18, p. 297, 1879.)

Walker, *Brit. Med. Journ.*, Vol. I., p. 305, 1879; (*Centralbl. f. Chir.*, No. 23, p. 376, 1879.)

Walzberg, *Berl. klin. Wochenschrift*, No. 19-20, 1879; (*Centralbl. f. Chir.*, No. 31, p. 512, 1879.)

König, *Berl. klin. Wochenschrift*, No. 7, 1880.

Wittelshöfer, *Wiener med. Wochenschrift*, No. 20, 1880.

F. Busch, *Die Belastungsdeformitäten der Gelenke. Für klinische Vorlesungen auf orthopädischem Gebiete.* Berlin, Hirschwald, S. 54. Skoliose.

As will be perceived, the above list includes but little or none of the literature of 1880, but from perusal of the latter we find that the interest in Sayre's method is constantly increasing, and there is hardly any other subject, except Lister's anti-septic method, which has aroused such wide-spread attention.

NEW EXCHANGES RECEIVED.

Virginia Medical Monthly, Richmond, Va. Landon B. Edwards, M.D., Editor.

Dental Cosmos, Philadelphia, Pa. Jas. W. White, M.D., D.D.S., Editor.

Medical Summary, Lansdale, Pa. R. H. Andrews, M.D., Editor.

Druggists' Circular, New York. J. Newton, Publisher and Proprietor.

North Carolina Medical Journal, Wilmington, N.C. M. J. De Rosset, M.D., F. Wood, M.D., Editors.

Medical and Surgical Journal, New York. Edmund N. Fishblatt, M.D., Editor.

Medical Monthly, Peoria, Ill. John Murphy, M.D., J. L. Hamilton, M.D., H. Steele, M.D., Editors.

AT THE MEETING OF THE ACADEMIE de Médecine, Paris, April 6th, 1880, Martin and Obelin gave a résumé of the good results they had obtained by substituting for internal use, the sulphate of copper for mercury, in the treatment of Syphilis.

It appears that the result of such medication in the different stages of the disease, as tested in the St. Lazare hospital, surpasses those obtained by the use of mercury; in one case of Ecthyma, Rupia and Gummata, cure was accomplished after the old classical treatment had failed. As a symptom of the saturation of the system by the copper salt, there was observed in two cases gingivitis, characterized by a green line along the free margin of the gum; the affection disappeared with comparative rapidity.

Toleration of the remedy was almost perfect, slight vomiting being produced in only one case. The dose was very small, 4, 8 or at the utmost 12 milligramms per day, given in solution; general baths, in which 20 grammes of the salt were dissolved, were also employed.

IN THE TABULATED SANITARY REPORT of the Royal Prussian Army and the 13th (Royal Würtemberg) Army Corps for the four years, from April 1st, 1874, to March 31st, 1878, edited by the Military Medical Department of the Prussian Ministry of War, (Berlin, E. S. Mittler & Son, 1880), we find a very high commendation of the favorable results obtained by "massage" in the treatment of contusions, deformities, and cases in which resorption of accessible exudation was secured. In several hospitals the utility of this new method of treatment was demonstrated beyond doubt by a comparison of parallel cases.

The above named report includes 1½ million patients, and we shall refer to this

important work hereafter. For the present, we desire to simply call attention to the good results of the introduction of massage into the Prussian military hospitals, announcing at the same time that in a future number we shall give a complete translation of an elaborate paper on this method of treatment.

RESUSCITATION OF A CRIMINAL THIRTY MINUTES AFTER EXECUTION.

In the Wiener Medicin. Wochenschrift, No. 17, 1880, Prof. Hofmann describes the remarkable and very painful circumstance attending the execution of the murderer, Jacacs, who was hung April 12th, 1880. The body was kept suspended for ten minutes, and after being taken down, his death was attested by the police surgeon, and the apparent corpse was then sent to the hospital for dissection; there however, half an hour after suspension, the executed man revived and partially regained consciousness, and it was not until April 15th, at 7.30 A.M., that after repeated attacks of convulsions, he died with symptoms of Pulmonary oedema.

Prof. Hofmann is of the opinion that a suspension of ten minutes is altogether too short, since other cases have been reported in which symptoms of returning life had manifested themselves after such an interval; in order to render a mistake impossible he thinks it ought to be continued an hour, and even then the body should not be taken down until the surgeon has made his examination. Moreover, the following circumstance is to be noted in the case of Jacacs: There were large glandular swellings on both sides of the neck, which may have prevented both the complete occlusion of the respiratory track by compression of the base of the tongue against the soft palate and vertebral column, as well as compression of the large cervical vessels—the two indirect causes of death by hanging; perhaps also it may be necessary to take into account, that, according to newspaper reports, the body was experimented on with electric batteries. That the man revived because fracture or dislocation of the vertebral column did not take place, is not tenable, since such an occurrence is rare and is only met with under certain conditions, as for instance, a simultaneous fall from a considerable height. Hofmann observed that he never found these lesions in suicides or at post-mortem examinations of executed criminals.

Though such an occurrence as the

above may not be regarded as a valid argument in favor of the abolition of capital punishment, it offers strong reasons

why the latter should be administered by means of the guillotine instead of the rope.

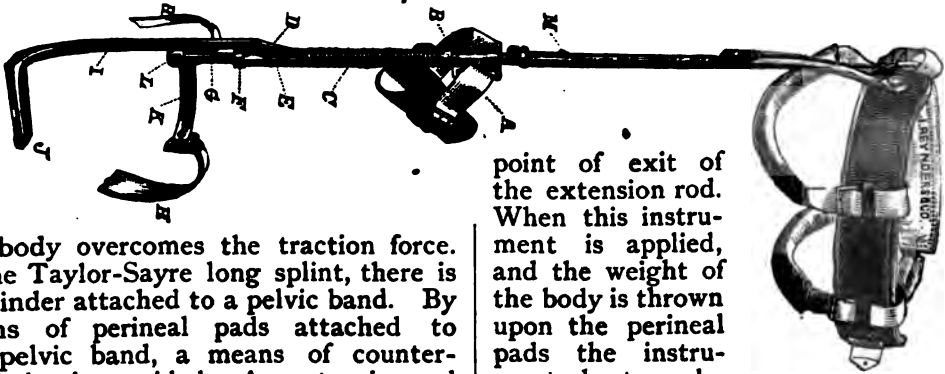
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DR. NEWTON M. SHAFFER'S IMPROVED HIP SPLINT, Manufactured by John Reyn-
ders & Co., 303 Fourth Ave., New York.

Before explaining the action of this instrument, it may be stated that the use of the customary long hip-splint (Taylor's or Sayre's) is open to the objection which I have noted and commented on for years, but which Dr. Hutchinson of Brooklyn first publicly called attention to—viz., that so soon as the weight of the body is thrown upon the perineal pads, extension, as such, ceases, and the so-called extension splint becomes in reality nothing but a perineal support. This is shown by the "bagging" of the leather straps which pass from the foot piece of the instrument to the adhesive plaster buckles at the ankle, whenever in walking the weight of

tension straps become loose, and the patient is able to swing the limb backward and forward to a very considerable extent. But when the weight is again thrown upon the sound limb, extension again occurs.

In the instrument pictured above the usual cylinder and pelvic band are employed. But, instead of continuing the extension rod to and below the foot, as in the Taylor-Sayre instrument, it is made to terminate at a point about $1\frac{1}{4}$ inches above the malleoli (*G*) and a band is attached which passes half way around the limb, posteriorly (*K*). To this band are riveted two straps (*HH*) which are attached to the adhesive plaster buckles. The foot piece (*F*) has an independent rod (*I*) which passes upward to the piston arrangement at *D*, and above the



point of exit of the extension rod. When this instrument is applied, and the weight of the body is thrown upon the perineal pads the instrument shortens, by

a compression of the spiral spring at *C*. In other words, the entire part, *D*, *I*, *F*, moves upward and the weight of the body is expended in shortening the spring—the straps at *HH* remaining taut all the while. The same degree of extension is exerted upon the diseased hip-joint, whether the patient lies down and or walks. Traction is constantly maintained, and the joint surfaces are not alternately protected and then exposed at every step, as in the instrument previously described. The spring, of course, acts automatically, and, so soon as the foot piece is removed from the ground the instrument lengthens, and is again ready to receive the weight of the patient.

This instrument has been tested in the Orthopaedic Hospital, and that it presents many advantages over the Taylor-Sayre instrument is obvious.

the body overcomes the traction force. In the Taylor-Sayre long splint, there is a cylinder attached to a pelvic band. By means of perineal pads attached to the pelvic band, a means of counter-extension is provided. An extension rod slides back and forth in this cylinder by means of a ratchet and a key movement. This extension rod terminates in the foot piece, above alluded to, and the foot piece forms the point of attachment for the straps which pass to the adhesive plaster. When the extension rod is pushed out by the ratchet and key movement, direct extension of the limb occurs. But when in walking, the foot-piece presents to the ground, the instrument being practically one continuous steel rod, cannot shorten. The entire weight of the body, bearing downward upon the perineal pads, overcomes any extension force, which does not exceed, in pounds, the weight of the patient. With the Taylor-Sayre splint it is easy to produce and maintain extension when the patient sits or lies down—but the moment he commences to walk, the foot approximates the foot piece—the lower ex-

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Editors North Carolina Medical Journal.

GENTLEMEN:—I cannot conclude this letter without saying a word in regard to a medicine which has recently been introduced into France by our enterprising countrymen, Messrs. Wm. R. Warner & Co., of Philadelphia. Among other specimens of their exhibit at the recent Exposition, their agent in Paris very kindly sent me several bottles of *Ingluvine*—prepared from the gizzard of the chicken,—with the request that I would give it a fair trial in the treatment of gastric irregularity and disturbance. I am pleased to be able to chronicle the fact, that, in three cases of pronounced atonic dyspepsia and in one case of chronic indigestion, it has acted like a charm—promptly relieving all disagreeable symptoms and restoring the stomach to its proper functions. My patients, who had previously tried without benefit all ordinary forms of pepsine, bismuth, cerium, nux vomica, etc., etc., are delighted with this new remedy and assure me that they experienced benefit from the first dose. Hereafter I shall prescribe it liberally and with great confidence in its therapeutic value.

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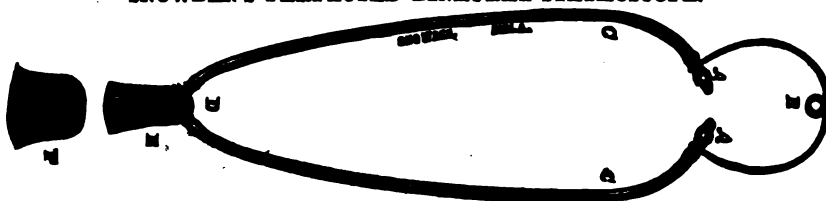
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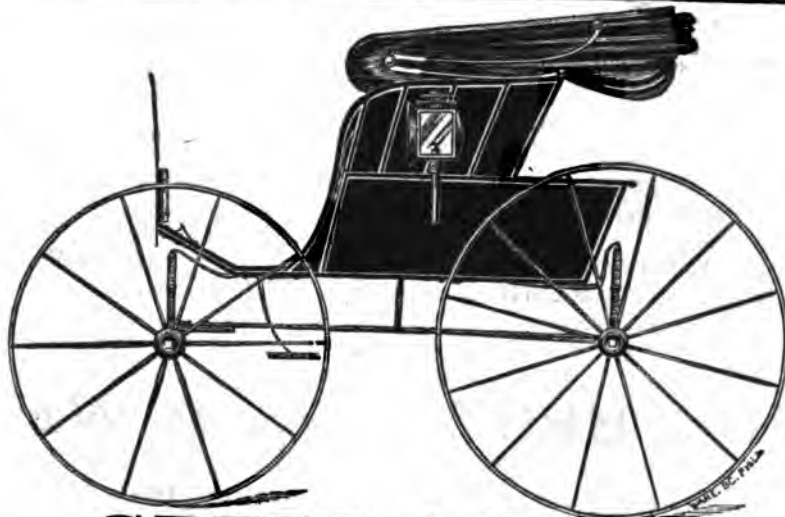
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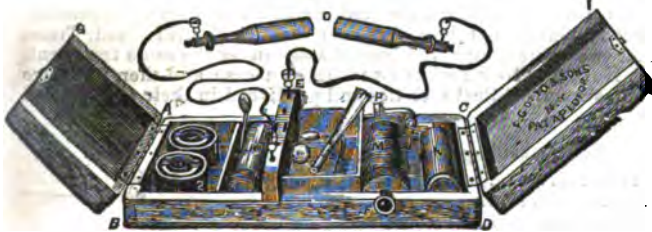
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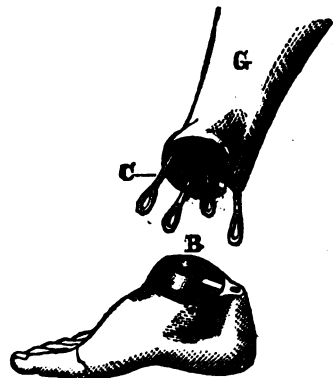
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Vol. I. No. 5.

New York, September 22d, 1880.

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Therapeutischer Almanach für Praktische Aerzte, Bd. 8, 1880. (Manual of Therapeutics for General Practitioners, Vol. VIII, 1880.) By Dr. G. Beck.

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[ORIGINAL COMMUNICATION.]

A SHORT CLINICAL CONTRIBUTION TO THE TREATMENT OF VARICOSE ULCERS OF THE LEG, BY MEANS OF THE ELASTIC BANDAGE.

BY ROBERT TAYLOR, M. D., New York.

Undoubtedly the fact has come to the notice of every practitioner of medicine, either by experience or reading the subject in any of our standard text-books on surgery, how extremely difficult it is, not only to cure but even relieve persons suffering from extensive varicose ulcers. These sufferers are the opprobrium of the profession, and are usually among the first that fall to the lot of the young practitioners—having exhausted either the skill or patience of the older members of the profession. It is no wonder then that any innovation in the treatment of this class of cases should be seized upon with considerable avidity. I have now treated many after the method of Dr. Henry A. Martin, of Boston, Mass., viz: by the use of the strong elastic bandage, with entire satisfaction to myself and patients.

Eleven of these cases, of which I have kept full notes, were of the most aggravated form—who had exhausted the resources of many physicians and dispensaries of this city without experiencing the slightest benefit. I have chosen two out of the eleven cases which fairly represent the extent of solution of continuity and the result of treatment.

Case No. 1. Bridget O'Connell, of New York City, aged 45 years, house-maid by occupation, consulted me for the first time December 20th, 1875, when she gave the following history. At 12 years of age, she received a severe blow upon her left ankle, resulting in an ulcer which remained open for nearly three years, it then healed and remained so for four years; at this time she received another injury in the cicatrix of the former ulcer by the pricking of a brier, which resulted in a second and much larger lesion than the first; this also healed up. She was then married and became pregnant; following her first accouchement, she had a severe attack of

phlegmasia alba dolens in both limbs. Before complete recovery of the latter disease took place, three large ulcers formed on her left leg and four on the right. These never healed, although subjected to various and innumerable methods of treatment, and they have been the cause of indescribable suffering for the past twenty-three years. Seven years ago she had to give up her occupation, owing to her inability to stand or walk for any length of time without great pain by so doing.

Present Condition. The patient is a large, well nourished woman, weighing 190 lbs. On exposing her limbs I discovered three large, deep, ill conditioned, filthy looking ulcers on the left leg, and four on the right.

Those on her left leg were situated as follows: the lower one extended from an inch below the internal malleolus, upwards about five inches, and from the spine of the tibia about half way around the leg; the second one was situated about one inch above the first, and was about the size of the top of an ordinary tea-cup; the third was on the posterior and inner part of the limb, between the other two. Those on the right limb were situated: the first, over the external malleolus, being about two inches in diameter; the second, about two and one half inches above the first and on the posterior part of the leg it was irregularly round, about three and one-half inches in diameter; the third, was about one and three-quarter inches in diameter and situated near the middle and anterior portion of the leg; the fourth and largest, involved the upper, anterior, and inner side of the leg, and was about six inches long by three and one-half wide; this one was separated from the third ulcer by about one inch of cicatricial tissue, showing that at some former time these two formed one. The legs were enormously swollen, oedematous and of a bluish, asphyxiated color. Veins varicose. On firm pressure, that peculiar, nodular or worm eaten condition so often noticed in varicose legs, was particularly marked. The largest ulcer on each leg involved not

only the skin and superficial fascia but had made considerable inroads in the destructive process on the muscular tissue.

Treatment. I had tried various methods of treatment on this patient, among which may be mentioned the recumbent position, Fuller's earth, camphor and morphia powder,—first introduced into the out-door poor department of Bellevue Hospital by Dr. James R. Taylor, with great benefit, relieving pain almost instantly and assisting the process of granulation,—transplanting, supporting the circulation with the common roller bandage, the elastic stocking, Prof. L. A. Sayre's basket strapping, etc. None of these afforded her much relief, with the exception of the basket strapping, and this only temporary.

Having exhausted all my resources, and meeting with nothing but failure, I concluded to try the strong elastic bandage, first introduced by Dr. Henry A. Martin, of Boston, Mass., whose admirable pamphlet "On the surgical uses other than Haemostatic" of the bandages above referred to, I had read a few days previously. Not having the bandages at hand, I advised the patient to return home and have her limbs well washed with warm water and call again in a week.

In the mean time I procured from Messrs. Leach & Green, of Boston, Mass., whom Dr. Martin referred to in his pamphlet as making the best, two bandages, $10\frac{1}{4}$ feet long, and 3 inches wide. On January 6th, 1879, patient returned, when I applied the bandages without any other dressing whatever. I directed her to remove them every second night and wash her limbs and bandages in tepid water, and re-apply the latter before rising in the morning. I did not see the patient again for three weeks. At the end of that time she returned to my office, having walked a distance of eighteen blocks, showing in her countenance contentment and happiness. She informed me that she had suffered none whatever since the application of the bandages.

On removing the latter, I found to my great surprise and satisfaction that the ulcers had diminished more than half their former size, and what remained of them showed a healthy granulating surface almost upon a level with the skin.

I advised the patient to continue treatment. I did not see her again till March 4th, 1879, when every trace of the ulcerative process had disappeared, her limbs were in a natural condition, and she was

able to attend to her duties as housemaid as well as before.

Case No. 2. Mrs. X., wife of a prominent judge in this city, aged 54 years, and weighing 212 lbs., consulted me at my office, July 6th, 1871.

She gave the following history: During her first pregnancy the veins of her lower extremities began to enlarge, becoming of enormous size before her accouchement. Her feet and legs during the later part of her pregnancy were swollen nearly twice their normal size. After pregnancy the swelling disappeared to a considerable extent and the veins became less prominent, except those on the posterior part of the knee and upper part of the leg. Her physician recommended her to wear an elastic stocking, by the use of which she was enabled to go about comfortably up to her second accouchment, which took place three years subsequently. During the second pregnancy the same enlargement of veins and tumefaction of her feet and limbs took place, but in a still more aggravated form.

She resorted to the elastic stockings again, but toward the latter part of her pregnancy they caused her so much pain that she was compelled to leave them off. After pregnancy her physician advised a new elastic stocking for her right leg, and a laced canvas stocking for the left, which extended half way up the thigh. Four months after her accouchement a small ulcer appeared on the anterior aspect of the left leg about its middle. This ulcer was very small, "a mere pimple," and bled very freely during the first 24 hours; after hemorrhage ceased, an ointment was ordered, the laced stocking was discontinued and an elastic one was substituted. In spite of all ointments, washes, plasters and powders, the ulcer continued to increase in size. Eight small ulcers formed around this one, which had attained considerable size, and all continued to extend until they became one large, deep, ill-conditioned ulcer. Three or four weeks after the ulcerative process commenced in the left leg, a small ulcer made its appearance on the right leg, just over the internal malleolus,—the patient attributed the exciting cause of this to a small irregularity in the elastic stocking. This increased in size until it reached as high as the middle third of the leg. It spread over the front of the leg across the ankle joint, extending irregularly upwards to the outer edge of the tibialis anticus. On the

inner side, it extended to almost the middle of posterior part of leg. Two small ulcers appeared on the upper and outer aspect of same leg. For many years she had been made almost an invalid, unable to walk without suffering excruciating pain. She gradually became worse, and four months before she consulted me was obliged to use crutches when she attempted to walk.

Present Condition. The general health is good. The ulcerative process involved the extent of surfaces already described. The larger ones—one on each leg—were irregular with raised, bluish, hard borders. At some places they were superficial, while at other parts the subcutaneous muscular tissue was involved.

The surface of the ulcers was of a bluish gray color, devoid of any granulations, and discharging a thin, greenish looking, purulent fluid of a very disagreeable odor. The smaller ones on the outer and upper part of the right leg were superficial, non-granulating sores.

Treatment. Having had such admirable results with the rubber bandages in the case above described, I decided at once to try them on this patient. I advised her to have the limbs well cleansed by frequent ablutions, and to return to my office the next day. In the meantime I procured from John Reynders & Co., 303 4th Ave., N. Y., the bandages.

On her second visit I applied to each limb a rubber bandage from the toes to just above the knees, and immediately after the application she was able to stand on her feet with comfort. She walked to her carriage without her crutches, with ease. I advised her to remove the bandages every night after retiring, to have them thoroughly cleansed and dried, and to bathe her limbs with warm water, reapplying the bandage before rising in the morning.

I did not see the lady again for three weeks, when she gave the following report: She had been able to get around with perfect ease, without the use of crutches or cane ever since the bandages had been applied; the swelling of the limbs had rapidly disappeared, and the ulcers had healed with surprising rapidity.

On examination I myself was astonished at the rapid progress. The two smaller ulcers were entirely healed, and the two larger more than half. I advised her to continue the treatment. I saw

her again two months subsequent to this visit and I found cicatrization complete in both limbs, and the feet and limbs of normal size. I saw patient again eighteen months after, when she informed me that she was entirely well, but continued to wear the bandages on account of the great support they gave to her limbs.

The above two are good examples of the worst cases that I have treated; but the result of treatment, which is certainly remarkable for its rapidity and painlessness, is not superior to that of others of like gravity. I believe the treatment of these cases by Martin's bandage is the best and most philosophic of any yet proposed.

The pathological phenomena, which finally culminate in ulceration are: diminished blood current in the capillaries becoming sluggish, and in consequence, the arterial supply must be diminished. As this condition increases from day to day, the tissues begin to suffer in the quantity and quality of the nutriment. The blood in the veins and capillaries becomes highly charged with worn out tissue and carbonic acid, while the proper supply of nutritive material and oxygen being very much limited, the tissues become starved and asphyxiated, and death must be the result. The elastic bandage counteracts these conditions, and hence its curative effects.

It empties the engorged and dilated veins and capillaries of their superabundance of poor blood; diminishes their calibre and gives them support, (more especially the veins) and in consequence of this, a freer ingress of arterial blood can take place, more food and oxygen is carried to the starved and asphyxiated tissues, and as a necessary result, repair of the damages of the tissues. It has been my experience that patients do better when the bandages are removed at night, washed, and allowed to dry and reapplied before leaving the bed in the morning.

THE USE OF MARTIN'S ELASTIC BANDAGE IN CHRONIC ULCERS OF THE LEG, ETC.

PROF. BRUNS, of Tübingen.

(Berl. klin. Wochenschrift 1880. No. 25—26.)

A year ago I called the attention of the profession to the treatment of chronic ulcers of the leg by means of bandages made entirely of rubber, recently recommended by H. A. Martin of Boston,

(H. A. Martin. Surgical uses other than haemostatic of the strong elastic bandage. Transact. of the Amer. Med. Association for 1877. Sep. Abdr. Boston 1878.—2nd Edition with some additions. Boston, 1879.—Brit. Med. Journal, Oct. 26, 1878, p. 624.—Ibid. Dec. 14, 1878, p. 874), and referred to some very favorable results obtained. The numerous inquiries directed to me since then by my colleagues induce me to give a further account of my experience in their use; strange to say, German surgeons have been singularly silent on the subject, while in English journals it has been very widely discussed, the apparatus has been commended, and its value both in hospital and private practice in America as well as in England, been already extensively recognized. According to my own experience, the bandage has proved extremely useful, so that I do not hesitate to designate *Martin's treatment of ulcers of the leg as the most valuable and the best of all the methods ever employed*; moreover, I have also found the appliance to yield very satisfactory results in many other affections, for example, in the treatment of varicose veins and eczema of the leg, chronic edema of the extremities, and certain pathological conditions of the joints; finally, it can be advantageously conjoined with the bloodless method and Lister's antiseptic dressings; indeed, it is precisely this diversity of its applications that enhances its practical value. I have frequently had occasion to order it myself, and in the clinic here a large number are in constant use.

Before entering into the details of their employment, I desire to say a word by way of preliminary, in regard to the bandage itself. As is well known, there are two varieties of rubber or elastic bandages: the one consists of a woven material (cotton or silk) interlaced with rubber threads, as in the case of elastic stockings, abdominal supporters, etc.; such have been employed for varicose conditions of the leg, and also by outdoor patients for ulcers of the lower extremities, in the latter case, of course, after having first applied a protective bandage for absorption of the secretions of the lesion; their elasticity is imperfect and possesses but little durability. The other consists entirely of rubber, and to this kind belongs Martin's strong, elastic bandage; it is by no means a new invention, since, I am well aware, that pure rubber bandages have been sold and occasionally

applied for ulcers of the leg, but not only their high price, but the inferior quality of their material were obstacles to their employment, their elasticity disappearing and the bandage becoming brittle and useless, after a short time. Martin's bandages excel in the following respects: the great superiority of material, which, in the first place, makes them of practical value; moreover, they are perfectly elastic, soft and flexible, and what is of primary importance, possess extraordinary durability. According to Martin, they have been worn daily from 2 to 4 years, without undergoing change, and I myself can testify that bandages, that were used almost constantly for 1½ years, remained entirely unaltered. Their superiority, the inventor assures us, rests upon the fact that in their manufacture only the best quality of rubber is employed which is treated with the least possible quantity of sulphur and exposed to no greater heat than absolutely necessary; I have frequently compared these bandages with those of other manufacturers, and also with those made of so-called patent "platte," and submitted them to competent judges and always found a striking difference in the above respects in favor of Martin's; therefore, I would commend without restriction the use of the latter, the slight increase in price being more than made up for by their more lasting qualities. Finally, a consideration that adds to their practical value, is the fact that they are manufactured in a greater variety of sizes, differing in length, width and thickness, enabling one to make his selection in conformity with the characteristic features of each individual case.

The employment of the rubber bandage will be found of the greatest value in the following conditions:

1. *Chronic Ulcers of the Leg*.—The treatment consists in enveloping the limb methodically with the bandage, the latter being applied in direct contact with the integument and the lesion, without first making use of any medication or dressing beneath; it is put on in the morning before the patient arises from bed, and worn during the day, enabling him to go about with ease and even perform severe physical labor; in the evening, after the patient has retired, it is removed, cleansed with water, and allowed to dry. During the night the ulcer is covered with a moist poultice, or better yet, with a dry protective roller.

An appropriate bandage is No. 1, which

is $3\frac{1}{4}$ meters in length, $7\frac{1}{2}$ ctm. in width, and furnished at one end with two tapes, with which it is fastened. In applying it, a turn is first taken around the ankle, it is then carried down under the sole of the foot and upward again on to the leg, and around the latter in spiral turns, without reversing it, as far as the knee; the tapes are then tied. The principal precaution to be observed in arranging it, is to avoid drawing it too tight; it should be put on only with sufficient firmness to prevent it from slipping off while the patient is lying down, then when the volume of the extremity is increased by the assumption of the erect position, it will be found to be exactly right; proceeding in this manner, oedema of the foot will not occur.

As a result of such treatment, it will be observed, in the first place, that for the first few days, as occurs whenever the integument is enveloped in any water-tight material, there is a profuse collection of perspiration beneath the bandage, which mingles and runs off with the secretions of the ulcer on removal of the appliance; also, after a few days, more or less numerous, minute pustules make their appearance on the integument, which, however, on continuing the bandage, soon disappear, when the skin gradually becomes entirely clean, smooth, and shining, and the secretion of perspiration also diminishes in the same manner. In some cases, in consequence of the elevation of temperature and the moisture, there is noticed a marked softening and maceration of the epidermis, which gives rise to a disagreeable feeling; this condition is also only temporary, but it is advisable in such cases to cover the wound at night with a dry compress or bandage, instead of a moist poultice. I have never met with a single case in which the bandage could not be tolerated on account of the irritation of the integument; but should such a difficulty arise, it is only necessary to first envelop the limb,—with the exception of the ulcer—in a gauze bandage, before applying the rubber apparatus. The subjective symptoms,—after the first few days of trial are passed, during which the patient has accustomed himself to the apparatus,—are borne cheerfully, since the previous difficulties of walking and standing as well as the spontaneous pain experienced at night, soon disappear entirely.

The changes that occur in the ulcer are on the whole the same as result from the ordinary methods of treatment with poul-

tices, ointments, plasters, etc., conjoined with a horizontal position of the limb. During the first few days the swelling which is generally present, and the firm, lardaceous infiltration and hypertrophy of the limb, diminish, and the circumference of the ulcer is also lessened. At a later period, the abnormal surface of the latter becomes gradually covered with granulations, which show a strong tendency to heal, and its indurated, elevated margins smoothed off and depressed until they are on a level with the surrounding integument. There is never any shooting forth of luxuriant granulations above the level of the neighboring structures, and the contraction of the area of the lesion by cicatrization keeps pace with the general improvement; one can reckon that, on an average, the latter process advances at the rate of 1 ctm. within a week.

(B. then follows with a detailed history of 17 cases treated with the bandage, which he sums up as follows):

The above carefully observed 17 cases I regard as sufficient to establish the reliability and practical value of the method of treatment under discussion, and that at least the large majority of cases of ulcers of the leg will recover thereby. There may, however, exist certain cases of broad, circular ulcers of extraordinary severity which may prove an exception to this rule; nevertheless, the opinion of Marion Sims, confirming my own, was not an exaggeration, who at the 8th Congress of German surgeons called attention to the general use of the elastic bandage in America, and observed that by their method chronic ulcers of the leg, the "opprobrium chirurgorum," would become a disease of the past, for the treatment by the bandage has a more universal application than any other, and, therefore, by its early employment, will make large spreading ulcers, the result of neglect, a rare occurrence. The eminently practical value of the method consists, not only in its extraordinary simplicity, but also in the circumstance that it does not confine the patient to bed, or detain him from his business a single hour, and such advantages are obviously of inestimable value to the lower, hard-working classes. In all the cases treated in this clinic, the patients were constantly employed at such work as carrying wood and water, and a larger number of others who wore bandages by my order, and, at the same time, continued to labor as masons, locksmiths, etc., extolled with one voice their re-

gained capacity for labor, and the removal of the pains from which they had formerly suffered.

2. *Chronic Eczema of the Leg.* During the above described treatment of ulcers of the leg, the beneficial effects resulting from the elastic bandage on the eczema, infiltration, and hypertrophy of the skin, which are not infrequently present, become at once apparent, since simultaneously with improvement of the ulcers, the integument becomes clean, smooth and soft; moreover, we need only to remember that rubber interwoven with linen was, particularly by Hebra, successfully applied in the most varying forms of eczema in the shape of gloves, caps, shirts, rollers, etc., according to the seat of the disease. The latter appliance, however, is entirely devoid of elasticity, and acts like every other water-proof material, partly by elevating the temperature, partly by dissolving the hypertrophied epidermis as a result of the collection of the perspiration beneath; but by enveloping the limb in the elastic bandage, we secure the additional advantage of the elastic compression, which in many severe forms of eczema of the leg is the very thing essential. The latter are cases of inveterate eczema, with great infiltration of the cutis and especially a simultaneous varicose condition of the veins; such conditions undergo marked improvement from the compression, which also promotes the re-establishment of the normal relation of the circulation and nutrition of the integument; it is these very instances of constantly relapsing eczema, in which it is so difficult to effect a radical cure, that the most favorable results are anticipated from the treatment by means of the elastic bandage.

Of practical experiences in this direction, we have only the report of Bulkley, (*Archives of Dermatology*, July and Sept., 1878. *Jahresbericht von Virchow-Hirsch*, II., 507) who extols the excellent results secured by the use of the appliance, curing not only recent cases, but also the most obstinate forms of chronic eczema in a relatively short time, and I myself, besides in those instances where the disease accompanied ulcers of the leg, observed the same effects in the following severe case:

A year ago, H., a railroad conductor, presented himself to me, suffering from a large infiltrated and secreting eczema of the left leg, extending over the dorsum of the foot, and the leg and knee as far

up as the apex of the patella; there existed also, numerous small superficial ulcerations of the integument, very marked varicose condition of the veins and considerable swelling of the leg. According to him, the disease had commenced 12 years before, and had been gradually spreading; on account of the intolerable pains and the resulting incapacity for labor, he had frequently placed himself under treatment and had been repeatedly and for months confined to bed, but soon after being released there had always occurred a relapse of the affection. By my advice, the patient wore during the day an elastic bandage, which enabled him to attend to his duties without interruption; when he returned, four weeks later, the eczema had disappeared and the skin was free from ulceration, thoroughly clean, smooth and soft. It is now a year, and the disease has not again made its appearance, not even on those parts which have not been bandaged since, for on account of the varices present and the swelling of the leg, which reappeared as soon as the bandage was omitted, the patient had continued its use; he cannot be profuse enough in his expressions of gratitude for his liberation from all his sufferings, and his ability to attend to his duties.

3. *Varices of the Leg.* The value of elastic compression for varicose dilation of the veins and co-existing infiltration of the cellular tissue, is generally recognized, and therefore, the application of flannel or elastic bandages and the wearing of elastic stockings are common modes of treatment; compared with the latter, however, by the use of Martin's bandages we possess the advantage of being able to regulate the compression to suit the wish, while the elastic stockings are not always of uniform proportions, so as to fit the limb to which they are applied; moreover, the former are much more durable, while the latter soon lose their elasticity, and are then useless.

In several cases in which the bandage was worn constantly during the day, the palliative effects were very striking; the pains experienced on long standing or walking were absent and the feeling of heaviness and fatigue was not present even when the patient was at hard labor. Byrne reports a very favorable result in a case in which a varix was on the point of rupture. But the question arises, whether by a long-continued use of the bandage a

permanent improvement or a radical cure of the varices may be possible? I confess that such seems to me improbable, at least in the worst cases; my own observations, however, extending over too brief a period, are not conclusive. Martin, on the other hand, reports that he observed a complete cure in a case of unusual severity, that of a woman, 65 years of age, who had continued to use the bandage $2\frac{1}{2}$ years.

In these cases of varices the appliance is worn only during the day, and is applied before the patient arises from bed in the morning; if there is at the same time no affection of the integument present, the limb may first be enveloped in a common gauze or thin flannel bandage. In mild cases of varices which do not require strong compression, Martin's bandages No. 1, A and B, may be used, which, although of the same length and width, are thinner and lighter than the ordinary one for ulcers of the leg.

4. *Elephantiasis of the Lower Extremity.* Though neither any personal experience nor those of others in this affection are at my command, I present this indication as one that may fall within the range of the treatment by the bandage, for in the lighter cases of elephantiasis, heretofore, we have succeeded, as a rule, in removing the induration of the limb and reducing it, at least, approximately, to its normal circumference, by long-continued elevation and tight, even forcible, bandaging with the flannel roller; but after such treatment is discontinued, the disease generally returns as soon as the patient resumes his ordinary occupation, obliging him to stand or walk much.

A two-fold advantage may be expected from the use of the elastic bandage; in the first place, the necessary uniform and firm compression can be made much more exactly and effectively, thereby abbreviating the treatment and perhaps dispensing with the continued recumbent position, and moreover, by constantly wearing the appliance a relapse may be prevented more certainly. In at least two cases of ulcers of the leg, I observed that the co-existing elephantiasis-like induration and degeneration of the integument disappeared completely under the use of the elastic bandage, though the patients were not confined to bed during treatment.

For the purpose of enveloping the whole limb, from the foot to the inguinal region, we employ Martin's bandage No. 2.

5. *Certain affections of the joints.* The advantage of uniform and equalized compression in the cases about to be considered is so well known that it needs no further confirmation, and I shall simply remark, that Martin's bandages, on account of their perfect elasticity, offer the most appropriate means for accomplishing such a result. As to their special application, I found them of great value in a number of *articular distortions*, these involved the wrist, knee and ankle-joints and were of recent or older dates. In cases of short standing, the swelling caused by the intracapsular effusion was at once kept within bounds, and afterward, resorption was accelerated; if the bandage is worn constantly, besides affording effectual support to the joint, the use of the limb may be permitted after a shorter time. A similar result was observed in this clinic in two cases of Haemarthros of the knee-joint, in which absorption of the extravasation took place much more rapidly than could have been anticipated by the use of the flannel bandage. In two other cases of haemarthros with a co-existing fracture of the patella, in one, the bandage was applied after first puncturing and washing out the articulation with a solution of carbolic acid, in the other, the appliance was used without the latter preliminary operation, and the absorption of the extravasated blood took place in less than eight days; as a retentive bandage for approximating and fixing the fragments of the patella, the apparatus proved more efficient than the usual dressing of adhesive plaster.

As to its employment in Acute Hydrarthros I have had no experience, but Byrne has reported some cases in which the most striking results were exhibited. In one of acute synovitis of the knee-joint, in a young woman, 19 years of age, where there was an increase of $2\frac{1}{2}$ inches in the circumference of the articulation, the application of the bandage alone had a wonderful effect, and accomplished a complete cure in 9 days. I regard the appliance as particularly valuable in chronic hydrarthros; as is well known, the principal difficulty met with in the treatment of this not very dangerous, but certainly very troublesome, affection, is not so much in securing the resorption of the effusion, which, by means of forcible compression according to Volkmann, or puncture and injection, or washing out the articular cavity, can ordinarily be effected, but rather in the extraordinary tendency to relapse which sooner or

later is accustomed to manifest itself on using the limb. I have thus far had occasion to use the elastic bandage three times for chronic hydrarthrosis of the knee-joint, and the results thereby attained were such as to strongly recommend a further trial of it; its long-continued use seemed to remove permanently the propensity above mentioned, and the resorption took place, in one case, after firm compression, in two days, in the two others, after light compression gradually increased, in 4 and 6 days, respectively. The bandage was afterward worn continuously by day and night for 2 to 3 months, and the cure was perfect, in two cases, in 4 months, in the third, at the expiration of a year.

This last case was very instructive. It occurred in a student, who already for two years, in spite of repeated treatment, had suffered from a constantly relapsing hydrarthrosis of the right knee-joint; after the effusion had been removed by enveloping the joint firmly with the bandage, and absolute rest, I treated the patient at first with the water-glass bandage, confining him to his room part of the time, at others allowing him to go about, but soon after removing the appliance the effusion returned each time. I now let the elastic bandage remain on undisturbed for several months, day and night, and permitted him to go about without restriction, upon which the swelling disappeared permanently, and after a year there has been no relapse.

After such an experience, I shall as a rule, prefer long-continued, mild compression to the same forcibly applied; at the same time, it is to be recollected that during the latter by means of the elastic bandage, far more precaution is to be observed than when merely the flannel roller is employed, for the elastic appliance, even when not firmly applied, causes, on account of its great elasticity, a steady, permanent pressure, and therefore a much more powerful effect than one of an inelastic character, closely enveloping the limb. Instead of attempting to secure absorption of the effusion by the method indicated, simple aspiration of the same may first be performed, as Martin advises, and the bandage then be employed; in such a case the latter should be worn for at least 6 weeks, uninterruptedly, day and night, in order to prevent the reaccumulation of the effusion. M. also recommends the same treatment for hygroma of the synovial sack, particularly when situated in front of the patella, and informs us that thereby,

in 7 cases, he had secured rapid and complete success. For enveloping the wrist, elbow and ankle-joints, Martin's No. 3 bandage is the best; for the knee, No. 6; for the knee together with the leg, for the purpose of strong compression, No. 4.

6. *In artificial anæmia, and as an antiseptic, compress dressing.* For these purposes bandages of clear rubber are better than the ordinary elastic one of woven material, since they are readily cleansed and disinfected; to complete the antiseptic dressing, I have frequently applied the elastic bandage over Lister's, allowing it to project beyond the margins of the latter, and to act as a light compress; by such an arrangement the dressings, even after long continuance, cannot move out of place, as easily happens in many situations, and moreover, not only absolute occlusion but also uniform compression is guaranteed, in the most certain manner. It is precisely the latter, as Volkmann has emphasized from the beginning and I myself have been convinced, which is indispensable in many cases in order to secure primary union. Therefore, the elastic bandage is invaluable as an antiseptic, permanent dressing, (Esmarch-Neuber) which, during the first few weeks or until complete union has taken place, can remain undisturbed; I have for several years sought for such a means in appropriate cases, and first found the same in this valuable appliance.

EROSION OF THE TRUNKS OF THE LARGER BLOODVESSELS IN ACUTE AND CONGESTIVE ABSCESSSES.

By DR. E. BORGHOLD, of Berlin.

(Berlin. klin. Wochenschrift, 1880. 33.)

The great revolution effected by the antiseptic method in the views of physicians could not long remain without influence on the treatment of a disease which the old surgeons, after many a sad experience, had accustomed themselves to regard as a *noli mi tangere* for the knife,—I mean to say the treatment of congestive abscesses.

It was Lister who warmly recommended opening the same under the protection of his antiseptic method, and next to him the merit is due Volkmann, of having first clearly demonstrated by a number of cases successfully treated, not only the possibility but the necessity of operative interference (Beiträge zur Chirurgie, S. 20, 192, 309, 344). V. made an incision of one inch in length, and then compressed the walls

of the abscess by means of carbolized sponges and cotton, over which he applied the typical antiseptic dressings, which sometimes enveloped almost the entire lower part of the body; by means of the latter he frequently succeeded in securing extensive primary adhesion of the opposite walls of the cavity. König observes in his text-book (p. 561), that Volkmann, according to recent private communications, among several cases had never met with failure; however, we cannot always expect by the help of the antiseptic dressings to also cure the original disease, but we can by means of them keep the abscess in an aseptic condition; and that alone is a great gain.

But while the local treatment has made great progress, the operative technics have also not remained at a standstill. In accordance with the more and more clearly established fact, that the most complete drainage possible is of the greatest advantage in the treatment of suppurating cavities, pains have been taken to provide favorable outlets for the contents of congestive abscesses. For example, in those originating in the vertebral column, and making their appearance below Poupart's ligament, after they have been opened at the latter point, a probe is introduced and pushed backward, and the operator then cuts down upon its blunt extremity, making a counter-incision in the lumbar region, thus insuring the freest possible outlet for the pus when the patient is in the recumbent position.

I desire now to call attention to a threatening danger in connection with this formidable operation, which, though of the greatest practical importance, is nowhere mentioned in the current text-books on surgery, and I wish at the same time to indicate some precautions, by the observation of which, the danger spoken of will be materially lessened. The following case may serve as an illustration: A cold abscess, having its origin apparently in one of the pelvic bones had pointed in the gluteal region; the attending surgeon opened it by a large incision, and introduced the finger for the purpose of making a counter-opening. The next moment a profuse hemorrhage followed, and death ensued immediately. Permission for an autopsy was refused.

In this case the accident occurred directly after opening the abscess; in another, it took place only on the third day after the incision was made. The patient was a young man, admitted at Bethanien,

Feb. 12th, 1880. He said that he had been suffering for some two months from pains in the left thigh, which for the last four weeks had confined him to bed; examination revealed a large, cold abscess on the anterior and internal aspect of the upper third of the left thigh. The movements of the hip-joint were free and painless, and the other organs of the body appeared to be normal. Feb. 13th, under antiseptic precautions, an incision was made from which about a pint of yellowish, laudable pus was discharged, and two drainage tubes connected by means of a safety-pin were then introduced. Dr. Wilms, who performed the operation, in view of the sad experience of his colleague, in the case above described, refrained from inserting his finger into the cavity of the abscess, and the sequel proved the wisdom of the precaution. An antiseptic compress of salicylated cotton and dry carbolic was applied. The general condition of the patient improved after the operation; the temperature which had been high, sank, and remained normal.

During the night of the 15th of February I was summoned to the patient, with the announcement that he was bleeding severely; hastening to him as quickly as possible, I found him moribund, lying in a pool of blood. I tore away the bandage without delay, and the hemorrhage, which had obviously come through the drainage tubes, ceased; meanwhile, however, the patient breathed his last. Attempts to revive him were unsuccessful.

The nurse had happened to be in the room just as the blood began to ooze through the bandage, and I had been at once called, and had hurried as quickly as possible from my dwelling, which was only a short distance off, but notwithstanding all this, I was unable to prevent the deplorable accident.

At the autopsy on the following day, I first made an incision through the integument, parallel with Poupart's ligament, a second on the inner, and a third on the outer aspect of the thigh, and dissected up the quadrilateral flap thus formed; beneath I found a large cavity filled with coagulated blood. In order to ascertain the exact point from which the hemorrhage had come, I opened the femoral artery immediately below Poupart's ligament, inserted the nozzle of a syringe, and carefully injected water into the vessel; directly after, it was discharged again in a small stream from the midst of the coagula, and after removing the latter

from the artery by means of a stream of water poured into the wound, I discovered an opening in the artery of the diameter of a pea, from which the hemorrhage must have come. Removing the remaining clots, a large suppurating cavity presented itself, at the base of which the bone, partly denuded of its periosteum, was visible; on the outer side was an incompletely detached sequestrum, 2 ctm. in length; the medulla was discolored to the extent of about 3 ctm.

It is a fact long recognized, that blood vessels traversing suppurating cavities or running along their walls, may finally become eroded, and undergo rupture; the most celebrated case is that of Diston, in which an abscess perforated the common carotid, reported in the *British and Foreign Medical Review*, Vol. XV, p. 155, 1843. In the same journal, eight other cases were afterward published, in four of which the large cervical vessels were involved; in three, vessels of the thigh, in one, the radial. In the very careful compilation of Gross, (*Observations on ulceration of the jugular vein, communicating with an abscess or an open sore*) in the *American Journal of the Medical Sciences*, 1871, p. 337 et. ff., there are a number of cases enumerated. This paper is such an elaborate one that it is impossible to reduce it to the form of a brief extract, and I will, therefore, simply recommend it to the attention of those interested in this subject, observing that, according to G., perforations of the following vessels have been reported: Aorta, subclavian, common carotid, internal carotid, superior and inferior thyroid and lingual.

To the cases enumerated by Gross I can add the following which I have collected in looking over the literature of this subject: One case of erosion of the temporal artery (*Schmidt's Jahrbücher*, Bd. XIV, S. 144), reported by Sturm, of Spremburg; one case of perforation of the axillary artery (Mackenzie, in *Edinburg Medical Monthly*); one of perforation of the tenth intercostal artery, in empyema, reported by Dr. Salomon in Vol. 5 of *Charité-Annalen*; further, one of aneurism of the femoral artery arising from its perforation by an abscess (*Gazette médicale de Paris*, No. 13, 1835, Dr. Salmède); finally, a case of erosion of the abdominal aorta by a descending abscess, originating from the spinal column, in a three year old boy, observed by v. Bardenheuer, and reported to the medical society at Cologne (meeting of July 13th, 1879).

In the cases just quoted, hemorrhage took place without operative interference, in consequence of spontaneous perforation by the abscess; I have, however, mentioned above, two in which such an accident occurred either directly after incision, or after the lapse of a few days; other cases of the same character are also recorded, which I will briefly cite.

Reported by Güterbock, in his monogram on injuries of the neck: Boy, nine years of age, suppurating parotitis; incised by the attending physician in the forenoon. On the evening of the same day, severe hemorrhage, continuing with but slight interruption through the entire night; following morning, child was taken to Bethanien in a moribund condition, and died a few minutes after admission, before the bleeding vessel could be found. The autopsy revealed a perforation of the external carotid, which, from its situation, could not have been made by the knife of the operator. In the paper of Gross above quoted are found the following cases belonging to the class which we are now considering; they all concern perforation of the large cervical vessels:

Case 1. Observed by Gross. Child, 21 months old. Abscess on the neck, after scarlatina. Incision. Four days later, sudden hemorrhage, and immediate death.

Case 2. Observed by David. Child, 6 years of age. Abscess on the neck. Incision. On the following day, hemorrhage and death.

Case 3. Observed by Sedgwick. Child, aged $4\frac{1}{2}$ years. Abscess on the neck. Incision, followed at first by discharge of pus, directly afterward, of blood. Hemorrhage ceased on tamponing, but returned several times, and finally resulted in death.

Case 4. Observed by Hoffmann. Child, 5 years of age. Abscess on neck. Puncture, and profuse hemorrhage. Sudden death in spite of tampon.

Case 5. Observed by Michaelis. Female, age not mentioned. Abscess on neck. Puncture. Fatal hemorrhage on the following day.

If we ask ourselves the question why so frequently, either during operation, or a few days after, a profuse and generally fatal hemorrhage from such abscesses occurs, I think, it may be answered that the immediate cause is the sudden evacuation of the pus, thus removing the pressure which the same had exerted on the walls of the vessel,—the latter having already lost in a marked degree, their firmness, as

a result of the eroding properties of the pus, can no longer resist the stronger impulse of the blood current; in the second place, rupture of the weakened walls of the vessel may result from the introduction of the finger into the abscess for the purpose of exploration, or the probe to make a counter-opening. If these views may be regarded as correct, the precautions which I desire to recommend in opening abscesses situated in the neighborhood of large blood-vessels, cannot fail to meet with approval. First of all, care should be taken that the pressure heretofore exerted on the walls of the vessel by the pus, is not suddenly removed; the abscess must, therefore, be evacuated somewhat slowly, which can be best accomplished by the use of a trocar, or by making an incision only large enough to permit a free exit of the pus. Further, all pressure for the purpose of more completely and thoroughly emptying the abscess, must be avoided, and it may be advisable, at the first incision, to abstain from any forcible introduction of the finger or probe, but, if there be no indication for any minute exploration of the cavity, to confine ourselves to the careful insertion of drainage tubes, and the application of an antiseptic bandage. In the case of a very extensive parametritis, operated on at Bethanien, in 1879, when, immediately after the incision, the finger was introduced into the enormous cavity, a profuse hemorrhage occurred, which was only with great difficulty arrested by means of a compress bandage. The patient finally recovered.

If after such a procedure the abscess does not heal promptly, we may proceed to make a counter-opening; meanwhile, we may assume that the walls of the vessels may have undergone the reparative process, or may have become adherent to the neighboring structures, thus preventing the occurrence of perforation. By the application of a compress, such a result is favored.

Further, it might be well to open both acute and chronic abscesses, particularly the latter, only under antiseptic precautions, as early as possibly, in order to prevent extensive dissection of the blood-vessels and their long exposure to the eroding properties of the pus; moreover, patients suffering from large abscesses, should for the first few days after operation, never be left without a reliable guard, and all influences which tend to increase the heart's action and the pressure in the

systemic circulation, should be removed as far as possible. Finally, it would be judicious not to undertake to operate in these cases without skillful assistants and the necessary armamentarium chirurgicum at hand.

RESECTION OF RIB IN EMPYEMA.

In the Medical Record of Sept. 8th, 1880, we have read with great interest an article by Dr. Charles A. Leale, entitled: "A Plea against Resection of the Ribs in Empyema."

The author remarks: "Resection of the ribs during the operation of thoracocentesis has now been resorted to quite frequently during the past six years in America, Great Britain, France and Germany." As to the latter country, so far as our knowledge of its literature goes, we think, Dr. Leale may be mistaken.

We believe it was Prof. Roser, of Marburg, who in pregnancy specially advocated resection of a rib in empyema, and he has given very precise indications for the operation, as will be recognized in the following quotation from his work on surgery: . . . "As already remarked above, fistulae situated laterally on the thorax are very difficult to heal, since the ribs come in such close contact with each other as to obstruct the discharge of the pus; the latter condition causes the fistula to become narrowed to such a degree as to interrupt the healing process, and threaten a reaccumulation of the purulent effusion. In such a case the establishment of a second thoracic fistula at a suitable point, for instance, in front, above the union of the fifth rib with its costal cartilage, offers the most simple remedy; at this point the ribs, on account of their form and situation, cannot approximate each other so closely as over the convexity of the costal arch. Another procedure that I have practiced successfully consists in the *resection of a small portion of the rib* at the site of the fistula. In very old cases, in which there exists great sinking of the thoracic walls, the latter operation seems to me to be worthy of preference as the most reliable means of keeping open the fistula."

I myself have performed thoracocentesis a number of times on both children and adults, and have never observed any indication for resection in any of these cases. I am certainly not aware that in Germany the operation is adopted for empyema, except under conditions similar to those above described by Roser. [ED.]

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HISTORICAL STUDIES.

Humanity is more in the habit of looking forward than backward. It is the anticipation of what is to come that occupies more of our thoughts than what is past. But though the future has its hopes, stimulating us to renewed exertions, it is actually a *terra incognita*, while the past has its lessons of experience, and it is well sometimes to take a retrospective glance, and see whether we can discover anything that may be of value to us hereafter,—anything that will enable us to avoid former errors and utilize advantages, to reject what is worthless and accept what is valuable, to walk erect where others groped and stumbled.

Undoubtedly the most of us appreciate the value of historical studies, in a general sense, but it is in one of a limited and restricted character that we are now considering the subject. In No. 1 of the International Surgical Record we gave an historical sketch in which we sought to show the importance of the history of surgery, and in another number of this journal we give a review of a work in which the study of the past events of our science, is urgently recommended.

Our best writers, both in their books and their contributions to current periodical literature, demonstrate clearly the worth and highly practical value of historical studies, but nevertheless, we find in looking over a great number of periodicals, including indeed the large majority, that this subject is underestimated and does not receive the attention and consideration which it merits.

In the race after new discoveries, those that have been long tried are neglected; the prevalent idea seems to be, that the study of works of older date does not pay for the trouble involved, the impression being that such works represent views which were done away with long ago, and as a consequence we observe in our day the discovery of so many things that are by no means new, and the repetition of old, long-discarded errors. Thus a great

deal of unnecessary labor is expended in travelling anew over ground that has already been traversed in order to regain a possession which had never been lost; moreover, a great deal is written unnecessarily and much worthless material accumulated, as a result of a neglect of history, while a too superficial judgment is fostered, and a too frequent generalization of solitary observations devoid of a sufficiently broad experimental basis, is observed.

A surgeon who is not well informed in the history of his science is in danger of erecting a superstructure upon a deficient foundation,—of placing the pyramid on its apex instead of its base.

In commending the careful study of the history of surgery which will acquaint us with what has been done by others in the past and thereby spare us a great deal of useless labor, as well as elevate our minds and fill us with greater admiration for our science, we cannot do better than conclude with the words of Virchow on this subject in the preface to the 70th Vol. of his *Archiv für Anatomie und Physiologie, und für klinische Medicin*: "Whoever has once tried to thread backward the long way traversed by his predecessors, whoever has felt how clear and lucid a discovery appears when we are familiar with the gradual stages of its development, whoever has discovered the causes of an error by which the most critical observers were misled, and whoever has comprehended that there is a nucleus of truth in every error, will never wish to belong to those who depreciate the value of historical studies."

TREATMENT OF FRACTURE OF THE PATELLA.

PROF. KOCHER, of Bern.

(Centralbl. f. Chir., 1880, 20.)

In No. 42, of the *Centralblatt für Chirurgie*, 1877, Schede reopens the question of osseous union in transverse fractures of the patella. His assertion, that it is even in our times a rare occurrence that true osseous union is secured, will certainly receive the common assent of surgeons. Recently, particularly in cases of old fracture, under the protection of antiseptic precautions, the incision, freshening of the fragments and suture have been performed with complete success, and after this, one would suppose that for skillful antisepticians the question had been settled, but I believe, however, that

the most experienced advocates of the antiseptic method will participate in the feeling which was mine in my last case, which was a person of high rank and treated in conjunction with Prof. Demme and Bourgeois, when the question arose whether we should attempt such a procedure. Who will assume the responsibility of laying open the knee-joint for the purpose of securing perfect union of the fragments in a fracture of the patella, especially in private practice, where, even under the most favorable circumstances, a strict observance of the details of antiseptic prophylaxis is difficult?

Who can describe the danger that may result, not only from a single error, but also, without fail, from the existence of a "certain diathesis"? And all this for the sake of a quantitative defect in the function of the knee-joint! No, antisepsis must advance a step further before the above method of operative treatment of fractures of the patella can be generally indicated, indeed, much less need is there that such should be the case, since we possess the means of securing osseous union without it. Schede has proposed a mode of treatment by which he arrived at such a result in three cases, and in the following we adduce proof of the efficiency of a method which resembles that of Schede, but which is based on a different conception:

That it is extremely desirable to first clear the articulation of the extravasated blood has been shown by Volkman, (Puncture of Hæmarthros. International Surgical Rec., Vol. I., No. 1). In this paper, however, V. calls attention to the fact that evacuation by puncture is not always possible; in a case of transverse fracture of the patella five days old, he found the suffused blood completely coagulated. Since 1875, I have adopted the rule of puncturing large extravasations in hæmarthros; I have been forced to the conclusion that coagulation of the blood does not depend so much on the duration of the extravasation, as the character of the injury. In a case of pure hæmarthros following a gunshot wound of the knee-joint I found the effusion still liquid after three weeks, and the same condition in cases of contusion after six weeks and fourteen days, while in one of fracture of the patella of three weeks standing, and another of three days, the blood was so firmly coagulated that it was impossible to evacuate it.

Extensive coagulation, of course, oc-

curs only after a certain lapse of time; this fact explains the different results reached by Schede; the latter, according to the description which he has given of his cases, performed puncture on the same day the injury was received, or at the latest, on the day following, and still found liquid blood, while I after three, and Volkman after five days found the blood already completely coagulated.

Hence arises the indication to perform puncture at once, as soon as the fracture of the patella comes under treatment. We never have washed out the articulation with carbolic acid nor observed that under the necessary precautions any reaction ever followed simple puncture. Whoever has been so unfortunate as to meet with carbolism—there are favored ones who have been spared such an experience—will gladly abstain from applying carbolic acid to the interior of the articulation.

Concerning the treatment after puncture Schede's observations are very worthy of consideration, and of special value appear the suggestions to change the dressings frequently, and to secure a better coaptation of the fragments. The necessity of a change, is a proof that the bandage does not accomplish all that it should, and in this respect good Malgaigne hooks are much more reliable; in both my successful cases of osseous union they were employed. But as every one will admit, these appliances are very inconvenient,—it is very difficult to fix them so that they can be depended on, and the intervening integument is readily thrown into folds and becomes pinched; therefore, we have preferred a method which is certainly much more simple, and in contrast with the hooks, causes the patient no pain. In the last two cases treated by me, by means of a curved needle, I carried a strong, double, silver-wire ligature beneath the fragments, entering at the lower margin of the inferior and emerging at the upper margin of the superior. The main obstacle met with in attempting to bring the fragments into apposition by traction of the ligatures, is formed, on the one hand, by the extravasated blood, (which in recent cases can be completely removed by puncture) and on the other by folding up of the the integument. It is impossible to penetrate the latter close to the margin of the patella by means of a curved needle, it therefore seems necessary to make an incision about 2 ctm. in

length in a longitudinal direction, downward from the upper margin of the patella and upward from the lower, in order to obviate the folding of the integument when the fragments are drawn together.

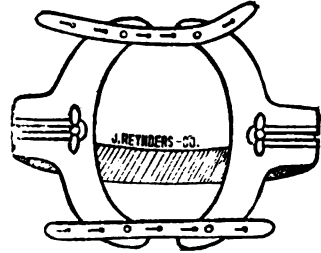
Since the incisions are only superficial and the wound made by the needle is deeply situated, antisepsis can be guaranteed with positiveness, and therefore the method is of universal application. The wires are twisted together over a roll of carbolized gauze, and they may be drawn more tightly after a short time; since the object is, to cut through the Quadriceps tendon and the ligamentum patellae, so that they may closely embrace the fractured bone, it would be too long to wait until this shall occur spontaneously, and hence I would advise that they be somewhat tightened after the first 48 hours, and again thereafter, if necessary. As for the rest, it is only required to apply the ordinary antiseptic occlusive bandage, and to place the limb upon a splint reaching from the tuber ischii to the heel,—Volkmann's being the best,—in order to secure union without any reaction whatever. Neither of the patients ever complained of the ligatures which had been drawn through the articulation.

I must confess that in both the cases treated as described, I succeeded in securing only a considerable diminution of the diastasis as an immediate result of the treatment, after removing the bandage; in the one case, the patient directly thereafter could make very complete and powerful active extension, and, only flexion was impeded, as usual, (after six weeks); the other patient being somewhat timid, would risk no movements, and no opportunity of keeping him under observation was afforded. Under favorable conditions, that is to say, early extension, evacuation of the extravasated blood and careful coaptation by obliteration of the tegumentary fold, materially better results will be obtained than in our cases. As to the question of real osseous union within six weeks, I do not expect it, and I may be allowed to express serious doubts in regard to Schede's view, that he had already to deal with a "young osseous cicatrix" in the cases reported to him.

Moreover, twice already I have observed a *secondary osseous union* of transverse fractures of the patella which had been dismissed with undoubted fibrous pseudarthroses, and, I believe I am justified by

my observations in assuming that Schede's cases were of the same character; at the expiration of 6 months, he protects the "young osseous cicatrix" from further injury by "further" treatment, and for this purpose applies an apparatus consisting of splints, which is to be worn for from 4 to 6 months; the latter has a hinge-joint at the knee, permitting a gradual increase in the extent of motion.

In those cases in which we obtained secondary bony union, a much simpler device was made use of; it was made by the deceased Wolfermann, and consisted of a simple, padded, steel spring, encircling the knee from behind and ending in front in two crescent-shaped bones, which, made after a cast, adapt themselves very accurately to the inner and outer, lateral margins of the patella, and which by means of two leather straps drawn transversely across the superior and inferior edges of the patella, are pressed together until they grasp firmly the entire bone.



This apparatus arrests flexion just at the moment when separation of the two fragments of the patella is about to occur, but otherwise allows sufficiently free play to the muscles that move the knee-joint, to enable the latter to regain its strength by exercise. The appliance is an exceedingly practical one, easily applied, and does not cause any discomfort to the patient. My successful cases are the following:

1. W. Keller, aged 44, received Sept. 19th, 1873, by a fall, a transverse fracture of the patella. The following day there was a large haemarthros with diastasis of the fragments, $5\frac{1}{2}$ cm. in extent. A plaster of Paris bandage was applied, and after fourteen days Malgaigne's hooks were employed, the extravasation having become for the most part absorbed. The hooks were left in place for two and a half weeks, when the plaster of Paris bandage was removed. On the day of his dismissal, eight weeks after the accident, the fragments were united by fibro-ligamentous tissue, of 3 mm. in width; Wolfermann's apparatus was applied. Some

months later he again presented himself, and could then walk with a cane. July 8th, 1876, he informed me that he had left off using the apparatus for the last year, and that during that time there had been no change in regard to the function of the limb; that he could extend the latter perfectly, while flexion was incomplete, and that between the two former fragments there still existed a depression about 3 mm. in width, which, however, was filled up by an entirely osseous mass.

Two years later this depression could only be felt on the lateral surfaces, anteriorly it no longer existed. The patella showed a length of 7 cm., while that of the other side measured $5\frac{3}{4}$ cm.; the width at the upper third of either patella was $5\frac{1}{2}$ cm.: laterally the bone was freely movable, and the knee presented no other deformity. Active extension was perfect, and flexion could be carried to 135° .

2. Nicolaus Bangeter, 48 years of age, received a transverse fracture of the patella on the evening of Nov. 25th, 1876; not until eleven days later could Malgaigne's hooks be applied in conjunction with a plaster of Paris bandage. After four weeks they were removed, and only union of the fragments having taken place, he was supplied with Wolfermann's apparatus. Nov. 7th, 1879, the case presented the following conditions: The line of fracture was still recognizable by the prominence on the edge of the former upper fragment, otherwise no furrow or depression was any longer observable; the fragments were united entirely by osseous tissue, the joint was normal, active extension perfect, and flexion could be carried to 70° .

(K. described two other cases, which, however, present nothing of particular interest, the one not having been treated by the above-described apparatus, and the other not having been long enough under observation to arrive at any conclusion as to the effects of treatment.)

The above cases seem to demonstrate that we possess no means of securing osseous consolidation within the period of time usual in other fractures, without concomitant risks, therefore, our aim should be directed toward obtaining the best possible approximation of the fragments; as much, however, can be accomplished in this direction in six weeks as in twelve, and consequently a longer fixation, as is often practiced, is not indicated.

Another stage of the treatment commences at the expiration of these six

weeks, and, as Schede and myself have demonstrated, osseous union may then be aimed at, by holding the fragments in firm apposition, by means of Wolfermann's apparatus and by permitting free play of the muscles of the thigh and leg.

SUTURE OF TENDONS IN TRANSVERSE FRACTURE OF THE PATELLA.

R. VOLKMANN.

(Centralbl. f. Chir., 1880, 24.)

V., after giving a résumé of Kocher's operation above described proceeds as follows:

I may be permitted to call this method the tendon suture, in contrast with bone-suture, which has been so frequently recommended and practiced of late, and I am of the opinion that this is the operation first to be thought of in recent, broadly gaping fractures of the patella, when simple dressings do not suffice. As to the necessity of puncturing the joint in cases of extravasations of blood which separate the fragments widely from each other, I have already offered some suggestion, (Volkmann on Puncture of Hæmarthros, International Surgical Record, Vol. I., No. I), and moreover, I concede with Kocher, that laying open the articulation for the purpose of making a bone suture is not justifiable, at least, should not be recognized as a method for general adoption.

But in Kocher's treatment, there is after all, a wire drawn through the middle of the joint, which must remain in place for some time, and the question arises, whether we cannot succeed without this? During the many exposures of healthy, (*i.e.*, non-ulcerating) joints undertaken by me during the last seven years, I have never met with the slightest accident; remembering, however, how little understanding of, and skill in, antiseptic surgery are still possessed by many even prominent surgeons, it is a serious duty to abstain from initiating methods of treatment which are only devoid of danger when performed by experienced antisepticians. More than ever is it true now-a-days, that there are operations which are safe in some hands, while unsafe in others.

That Malgaigne's hooks have caused ulceration of the joints and death of the patient in a number of cases, is only too true; I myself know of two which occurred in the practice of friends, and which were never published, and another

sad experience met with in my own clinic a number of years since, of which I shall speak directly.

Long before the introduction of antiseptics I attempted suture of the tendons in fracture of the patella, and though the ligature was left in place only a very short time, until the plaster of Paris bandage which was at once applied had hardened, I twice met with very satisfactory success. The two cases were described in Virchow's and Hirsch's *Jahresbericht f. 1868, Bd. II., p. 364*. "In two cases I drew through the tendon of the quadriceps and the ligamentum patellae, while the integument was strongly retracted, at first in an upward then in a downward direction, a simple loop of thread, and knotted the same over the patella; by this means the fragments were brought into contact, and at the same time the prominent edges were depressed. Then a very tightly fitting plaster of Paris bandage was applied, and directly after it had hardened, a fenestra as large as a two-cent piece was cut into it, corresponding to the spot where the ligatures had been tied, and the latter were cut and withdrawn. In one case, firm osseous union resulted, in the other, a very narrow, fibrous, intermediate substance was formed; in a third case, one of my clinical assistants applied the bandage in the same manner, and though the ligature was removed after remaining in place hardly a quarter of an hour, ulceration of the articulation and death from pyaemia ensued." The autopsy showed that in this unfortunate case the ligature had been introduced too deeply, and transfixed the joint, and that the plaster dressing had not been padded but applied directly to the limb after enveloping the latter in moist blotting paper; more recently I repeated the above operation with some slight variations, and the result was all that could be desired. Should we attempt it under antiseptic precautions, of course, we would likewise select silver wire for the ligatures, and leave the latter in place until firm union has been established, indeed, proceed in all other respects in a manner similar to Kocher. I believe that my method in the majority of cases, not taking into account the diminished danger, offers certain advantages.

That we do not succeed in invariably securing osseous union in cases of transverse fracture of the patella, is simply the fault of the inefficient methods of treat-

ment heretofore practiced,—the imperfect coaptation of the fragment; this is proven by the results of resection of the knee-joint by transverse section and catgut-suture of the patella. In all cases in which the opportunity has been afforded of examining anatomically the articulation thus selected, osseous union was found to have taken place; I myself have observed this in three cases, König in two, (*Centralbl. f. Chir. 1880, p. 58*) Schede, as far as I am aware, at least, in one. Such union must acquire very rapidly sufficient firmness that the fragments may not again separate, since catgut is soon absorbed, or, at least, soon loses its firmness; therefore, it seems to me of importance to apply the ligature as early as possible, so as to secure thereby, after puncturing the joint, perfect coaptation of the fragments, and not rely upon tightening those composed of wires, at a later date.

We notice in one of our contemporaries a review of a pamphlet by our esteemed friend, Prof. Frank H. Hamilton: *Fracture of the Patella*, a study of 120 cases, and we sincerely regret that we had not the pleasure of seeing the original ourselves, and that indeed we only observed the before mentioned notice of it after our translation of Kocher's article on a "New Method of Treatment of Fracture of the Patella," had been given to the printer. (*Ed.*)

MASTITIS, NOT OCCURRING DURING LACTATION, AND SECONDARY TO SCABIES.

DR. AUGUST KARST, *Kreuznach*.

(*Berl. klin. Wochenschrift, 1880. 32.*)

During the month of March, 1879, I was called to Frau K., who complained of severe pain in the right mamma; she had then been married three months, but still, according to her testimony, menstruated regularly. I found on examination a tolerably well developed mastitis, and explained to the patient that it was necessary to incise the gland, and under antiseptic precautions made an incision, and drew off about a pint of pus. When I renewed the dressings two days later, she informed me that for several weeks, even before she had felt the pain in the breast, she had been troubled with violent itching on her body, particularly at night, when in the warm bed, and had been obliged to scratch a great deal; I examined her and found a large number of well-marked acarian furrows, as well as excoriations, the latter being the result of the scratch-

ing, and very abundant in the integument covering the areolae of the nipples on each side. The origin of the mastitis was now clear; it had no doubt been produced by infection: into the excoriations resulting from scratching the areolae as well as the nipple of the right side, germs had in some way been introduced which had excited inflammation.

The correctness of this conclusion is proven by the following case from the practice of another physician of this place. The latter related to me incidentally that he had recently observed a case of mastitis not connected with lactation, which he had treated by incision; the patient was a peasant girl, fourteen years of age. I then related to him the above history, and suggested that he examine the patient for excoriations; the very following day, he communicated briefly that he had followed my advice, and discovered well developed scabies.

In another case occurring in my practice, which I treated in the forepart of 1878—a girl from the wealthy class of society, suffering from scabies, there resulted from the scratching no mastitis, it is true, but a very obstinate form of eczema of both areolae, which even at the expiration of a year was not yet completely cured, though the disease had disappeared from the body elsewhere.

The two cases above enumerated demonstrate the truth of König's observation in his *Lehrbuch der Chirurgie*, Bd. I, S. 638, 1. Aufl., where he says of the mastitis of lactation: "the abscess in these cases might have resulted from infection through a minute fissure;" indeed, the evidences of such an origin are much stronger in our cases, since in the same it cannot be attributed to retention of the milk, etc. These cases should also lead us to keep in view this point during the treatment of females suffering from scabies, and under such circumstances it may be advisable even when there is no mastitis present, to apply thoroughly to the gland, particularly the nipple, a 2½% to 5% solution of carbolic acid, and afterward to keep it covered with an antiseptic material—carbolized lint or salicylated cotton—until the scabies is completely cured.

From our two cases we also learn how great the damage that can be accomplished by the little acarus; I believe I have also observed the same in the case of another animal parasite, viz.: the pediculus capitis; without being able at this time to refer to particular instances, I have

nevertheless, in the course of time, received the impression that very frequently, in children, eczema and excoriations of the scalp are produced entirely by the latter parasite, and that thus the door is opened to the entrance of germs exciting inflammation, and giving rise to lymphangitis and lymphadenitis, both acute and chronic,—indeed by the presence of the pediculus the entire range of symptoms of the so-called scrofulous affections may be produced.

In justification of these lines I may be permitted to add, that in the literature to which I have had access, I have not even found this causative relation between scabies and mastitis mentioned, much less described.

AMPUTATIONS AND STUMPS.

II.

P. Güterbock in his *Klinische und Anatomische Untersuchungen über einige Formen des conischen Amputationsstumpfes* (*Archiv f. klin. Chir.*, Bd. XV.), studies the different forms of conical stumps following amputation. According to Erichsen they are generally the result of too short flaps, or of not sawing through the bone high enough up, but may also be the consequence of inflammation or suppuration of the soft parts before operation, and their retraction during the granulating process. Piragoff and Malgaigne observe that conical stumps after amputation, are nearly always connected with external necrosis of the bone, while Stromeyer thinks that there is only a limited relation between the two conditions.

Güterbock's paper is largely occupied in the consideration of cases in which the conical stump was the result of a disproportion between the soft parts and the bone, where there occurred especially an increase of volume, or as Stromeyer terms it hypertrophy of the bone stump; according to G.'s observations, however, the latter condition was not preceded by necrosis of the extremity of the bone, nor were the two combined, but, on the contrary, careful examination showed that it was alone the increase in volume of the osseous structure which produced the prominent shape and failure of union, although the condition of the soft parts in relation to the bone was also abnormal.

But there are also cases in which the stump only assumes a conical form long after union has taken place, while an atrophy of the surrounding soft parts occurs in the ordinary way, and in which

the bone is kept in a state of chronic irritation by the continued wearing of prosthetic apparatus; such cases (according to Chauvel), especially of the thigh, are by no means rare; as a rule, we find accumulated layers of the compact substance of the bone, or the deposit of large bony spiculae, and an exact border-line between the old bone and these osteophytes, which are generally characterized by an ivory-like consistency, does not exist. As already noticed, such hypertrophies, or as G. prefers to call them, "hyperostoses," have quite another significance in this connection; (this name is identical with that employed by the author of Circular No 6 of the U. S. War Department, — Philadelphia, 1865, — for similar exuberancy of the normal reproductive power of the amputated bone. On page 53 of the Circular, we found a diagram of a well-marked case of hyperostosis of the superior extremities of the right tibia and fibula, and appended to it is the observation, that this new formed bone exhibited the histological character of ordinary callus). They are directly connected with the healing process, develop within a few weeks after amputation, and frequently impede more or less the process of recovery by complication with a so-called "ulcus prominens."

We must not omit the fact that there exist cases in which there occurs an acute development of the conic stump, the result, not of hyperostoses, but of other bone formations, leading to increase of the tela ossea of the stump; such cases of early or exaggerated reaction are really those of osteo-myelitis acuta of the amputated stump, involving not only the medulla but all the component parts of the bone, and post-mortem examination reveals the presence of cream-like masses of the size of a hazel-nut along nearly the whole length of the stump, and the periosteum, which can be readily detached, is partially infiltrated with material of a doughy or semi-fluid consistency, and is very much thickened; moreover, points of ossification are found in the membrane, representing a true increase in volume of the diameter of the bone.

In cases of chronic, conical stumps, and particularly in that form which is characterized by the presence of hyperostoses, the latter may follow the normal healing process, the conical stump and an excessive proliferation of so-called external callus developing themselves simultaneously, and from the same may afterward

originate the peculiar osteophytes; but it is not always that their formation is preceded by such a simple course, the process of union being frequently interrupted or retarded by various traumatic complications.

But besides those conical stumps resulting from acute inflammatory processes, there are others in which the hypertrophy of the osseous tissue is based on other pathological processes than the above, giving rise to spongy hypertrophies; in such there is no trace of a continued medullary canal, its place being completely filled up by a profuse spongoid tissue, the latter also taking the place of the compact substance, giving rise to considerable increase of volume. Spongoid hyperostoses after amputation, as well as elsewhere, are generally found in connection with caries; partial ossification of the interosseous ligament after amputation of the leg or forearm is also no unusual event, and is especially to be anticipated when a prosthetic apparatus has been long worn, causing a condition of chronic irritation of the extremity of the bone.

In another article (*Neue Untersuchungen über einige Formen des conischen Amputationsstumpfes*, Archiv für klin. Chir., Bd. XVII.) Güterbock occupies himself with those cases which exhibit an atrophied stump; as to their condition the details of our knowledge are as deficient as they were formerly on the subject of hyperostosis. Atrophy of the extremity of the bone is not infrequently associated with new formations. S. v. Rustizky in his experiments, which originally concerned the resorption of bone and the development of giant-cells, examined also the conditions of resorption present in amputated stumps; he amputated the limbs of rabbits and examined the stumps at different stages after operation, and found beneath the periosteum, Howship's lacunae, and in the latter, giant-cells; moreover, he observed the same when the limb of the animal had been constricted by means of an elastic bandage, resulting in dry gangrene, and similar conditions during the process of resorption of ordinary callus. Even cases of the most pronounced atrophy of the amputated bone do not exclude the possibility of such new formations as ordinarily appear after operation, since frequently, even in the purest cases, there is an occlusion of the open medullary canal by a new-formed plate of bone.

As a result of the observations recorded

in literature by Louis, Larrey, Langstaff, Froriep, Foerster, Chassaignac, Stanley, Paget, Volkmann and Channell, as well as his own researches, Güterbock is convinced that atrophy of bone after amputation is by no means a regular or even a specially frequent occurrence; that it may be the consequence of inactivity and want of external excitants is beyond doubt, but it does not follow that such conditions are frequent or regular factors, and that therefore the abnormal process under consideration is ordinarily to be anticipated; the contrary is more generally the case, and moreover the comparatively few instances of so-called pure atrophy are by no means identical in their nature.

On section of a bone stump in a longitudinal direction, we observe a great variety of conditions in different cases; it is true, the atrophy is more generally concentric in character, so that there has been a diametrical decrease in the volume of the bone, but the pathological process has been going on not only externally, but also on the inner aspect of the cortical substance. The atrophic tapering of the bone may therefore exhibit the most varying forms, in some instances regular, in others more or less irregular; in the latter cases the resorption frequently occurs in such a manner as to give the bone more of a flattened than of a conical character. As to shrinkage of the internal lamellae of the cortical substance, this may proceed so far that the latter is no thicker than common note-paper, and the very much enlarged medullary canal then very often occupies the place of the normal cancellous tissue.

There is another variety of atrophy of the amputated bone to be mentioned, viz: such in which the reduction in volume has led to diminution in the comparative length of the bone, so that the point of amputation is found to be nearer the articulation above than the corresponding point on the sound side; this fact considered in connection with those above stated, demonstrates plainly that this pathological condition, heretofore regarded as of a uniform and simple nature, may be the result of a variety of processes; how far it may be modified, or the character of the influence exerted by irregularities of the healing process, traumatic complications, the existence of former disease of the bone, etc., are points not yet clearly established.

A reduction in the length of the stump as a result of an arrest of growth—a di-

minution which is merely relative and not absolute—is of course only possible when amputation has been performed during the period of development; it is most remarkable when that one of the two epiphyses is removed which is most concerned in the growth of the bone, and the result is more marked in operation on the femur than on the bones of the leg, and on the latter than on the humerus.

On the other hand, the fact that bone amputated during the stage of development may afterward undergo additional prolongation, is also undeniable, since on account of such a phenomenon it has been several times necessary to resect the protruding conical portion; as a possible cause of such an occurrence, may be mentioned, the preservation of a periosteal flap before section of the bone, however, whether it may be more frequent than the above mentioned arrest of development cannot be decided with certainty, it can only be said that neither is to be regarded as a regular sequence after amputation in children. A point of clinical importance in connection with an arrest in the growth of the stump, is the fact that the prosthetic apparatus must at a later period be renewed or at least lengthened.

In cases in which the atrophy of the bone is not due so much to an excessive absorption of the normally developed callus, as to inflammatory irritation, when not infrequently other products resulting from the latter cause may make their appearance (neuroma), a resection of the extremity of the bone will not suffice, but a second amputation higher up will be indicated.

As already observed, other causes of conical stumps are necrosis and caries of the amputated bone. As to the former, its origin is not always known; caries, which is less frequently the direct cause of conicalness than of a retardation of the healing process, is in a large number of cases only a relapse of the original morbid condition which necessitated the amputation, though it may develop itself otherwise, and particularly remarkable seems its appearance after injuries on the battlefield, in the case of perfectly healthy individuals, belonging to a generally vigorous and robust class; a combination of caries and necrosis has also been observed.

BOOK REVIEWS AND NOTICES.

P. Vogt, Greifswald. *Moderne Orthopädie* (Modern Orthopædies). Stuttgart. Ferd. Enke. 62 Pages. Review by R. Volkman, of Halle.

In this pamphlet Vogt discusses, 1st, The Mechanical Treatment of Kyphosis; 2d, The Treatment of Congenital Talipes.

1. *Kyphosis*. The description of the mechanical appliances which are at present employed is preceded by a brief review of the aims sought by such treatment. Some anatomical remarks are also introduced here, according to which the early complication of the disease by the destruction of the intervertebral cartilages, gives to the former, which until then presented only the character of a disease of the bone, the significance of an affection of the joints. V., however, emphasizes the fact that, as elsewhere in young subjects, so also here, the disease generally develops itself in the growing bone lamellæ, and that, therefore, it originates most frequently either on the anterior surface of the bodies of the vertebræ, or in those layers most contiguous to the intervertebral cartilage. A somewhat more critical and cogent investigation of the anatomico-pathological relations is certainly desirable in order to explain to the reader the justification and the necessity of the modern mechanical methods of treatment. There still exist surgeons who fear that union will be prevented by extension of the spine, or a sort of separating force applied to the point of deviation, and to those who have no correct idea of the anatomical conditions existing during the advancing destruction and the process of healing, this objection seems well founded.

Concerning the mechanical treatment, Vogt commences with a historico-critical enumeration of the various postural methods and the corresponding apparatuses; placing the patient on padded rolls, recommended by Maas as a substitute for Rauchfuss' swing, is justly praised for certain cases. Among the portable appliances permitting the patient to move about, the value of Taylor's is critically discussed, and we cannot but coincide with the author when he asserts, that its reducing effects are very insignificant compared with the results obtainable by means of Rauchfuss' swing, the roll of Maas or extension by weights.

The author commends highly the jacket of plastic felt, applied during the suspension of the patient; this apparatus com-

pared with Sayre's plaster of Paris jacket, possesses the great advantage that it can be removed and reapplied at any time, which is a consideration of more value in spondylitis than in a similar treatment for scoliosis; V. himself cuts the jacket out of felt, after paper patterns, which is certainly a cheaper, but at the same time a more complicated procedure, and one requiring much more practice than the selection of an already finished jacket, moulded to the thorax, from a collection of various sizes and forms. The assertion that felt jackets are not only insufficiently strong, and that they quickly become soft, can only be applied to those made from inferior material. When the lower dorsal or the lumbar vertebræ are affected, the treatment by portable apparatus (felt jacket) alone is sometimes sufficient; in kyphosis of the middle or upper dorsal vertebræ it will not suffice; during the first stage, at least, and during the rapidly progressing destructive process and increasing deformity, distension and decubitus by the application of Rauchfuss' swing and Maas' roll or extension by weights, are necessary and in not a few cases the two former must be combined with the latter; cervical kyphosis during the so-called florid stage, must be treated exclusively by the extension swing.

V. is inclined to believe that by a selection of appropriate cases and a due regard to the stage of the disease, something might also be accomplished by means of massage, passive motion, faradization, etc. (?)

In conjunction with the mechanical treatment, he commends the application of ice-bags, and Hueter's carbolyzed injections, which are said to be effective if they only reach the neighborhood of the seat of inflammation.

The treatment of abscesses is not mentioned, which appears the more strange since in the last few years great progress has been made, and greater is to be anticipated, in this direction, particularly when we shall feel ourselves justified in incising earlier and at more favorable points, these collections of pus.

2) *Talipes*. V. is in favor of the earliest possible treatment of congenital talipes, and recommends for this purpose, plastic felt splints, moulded to the shape of the reduced member. Indeed, at least in Germany, this affection comes under the notice of the surgeon, as a rule, much too late, and, particularly, the wide-spread notion, that the treatment is best delayed

until the end of the first year, must be discouraged; the obstacles to straightening the foot are infinitely greater at that time than shortly after birth, and to the above error may be attributed the large number of cases of incomplete success, complete failures, and severe relapses, which every one with any extensive experience must have noticed in his own practice.

The apparatuses, appliances, splints, and boots of antiquated patterns, made of wood, leather, or iron, the solid permanent bandages of pasteboard, plaster of Paris, water-glass, etc., cannot be used for small children, who still wet themselves, and who must be bathed daily. The author is also correct when he says, that the treatment by manual correction, and fixation by means of the plaster of Paris bandage is exceedingly tedious, and—unreliable; the latter must be particularly emphasized. Vogt has arrived at the conclusion that, in the case of infants, all appliances which fix the foot immovably for months in a certain position, are much less effective than such as permit it to be liberated once or twice daily, in order to employ perseveringly and with some force those systematic passive motions to which the term "manipulation" has been applied.

Instead of permanent apparatus, or complicated appliances, V., as already mentioned, recommends in the treatment of congenital club-foot of the new-born and of infants, splints of plastic felt, which are moulded to the foot, after the latter has been brought into the best possible position, and which can be removed and re-applied by the parents; he has also used, for the same purpose, splints of gutta-percha, which offer the advantage of greater elasticity and durability; they, however, present the drawback of not hardening as quickly as those of felt.

For cases of old clubfoot or relapse, V. recommends wedge-shaped excisions from Chopart's joint, and what, at first sight,

may seem singular, section of the tibialis posticus muscle, alone, or in combination with the former. The observation, that osteotomy must be restricted as much as possible, for the reason that an already abnormally short foot will be rendered still more so by it, and that, frequently, the reduction in the desired direction can only be accomplished by excision of a very broad wedge, (2 ctm. to $2\frac{1}{2}$ ctm.) must be recognized as just; tenotomy of the tibialis posticus (perhaps combined with that of the tendo-achilles), will, according to the author, render osteotomy unnecessary in some cases, in others prove of great assistance to it. The changes which have taken place in our views of the value of tenotomy are universally known, and the experience of V. is limited to only two cases, but his communications merit consideration, and so it is necessary to return once more to tenotomy of the tibialis posticus which seemed to have been done away with for all time; V. advises that the tendon be exposed by an incision, one inch in length, above the malleolus internus, raised, and divided, and the suggestion is worth following. The open section is, for those who are experienced in antiseptic surgery, at least as devoid of danger as the subcutaneous operation, and, moreover, the latter cannot be executed with the necessary certainty and precision on this muscle.

IN the Medical Record of Sept. 4, 1880, we find a communication of Dr. R. I. Lewis, of the Pennsylvania Hospital, Philadelphia, on Fracture of the Patella, treated by a modification of Malgaigne's hooks. To the author and the readers of the latter it must prove a source of special interest to peruse our translation of Kocher's article on the Treatment of Fracture of the Patella, in another column of this number, and the highly practical comments of Volkmann on the same; such translations demonstrate beyond doubt the value of our publication.

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This and the following cuts are two-thirds the size of the manufactured instruments.

The instrument was first exhibited before the Philadelphia County Medical Society, on Oct. 14th, 1874, and described in a paper upon Anaesthetics, published in the Philadelphia Medical Times, No. 162. It is now made simpler and stronger than the first that were offered to the profession.

It consists of a metallic frame, sufficiently large to cover the lower part of the face. The bars are nearly a quarter of an inch broad, leaving a quarter of an inch between each and its fellow. The spaces are made by a punch, which removes a section from a solid sheet of metal. It will thus be seen that there can be no danger of the bars giving way, as they would were they soldered upon a band.

In Fig. III we reproduce Fig. II, with a bandage partly laced between the bars. It has been passed from side to side, dividing the instrument into parallel sections. On the right, a part of the bandage may be seen rolled up. When the bandage has been passed between all the bars, and the hood or cover put on (Figs. I & IV), one can look through the instrument from end to end, as there is a space of nearly a quarter of an inch between the several sections of the bandage.

The advantages of this mode of construction, are:—

1st. It gives the patient (Fig. IV), the freest access of air.

2d. It affords a series of thin surfaces upon which the ether can be poured, and from which it will almost instantly evaporate. In this respect it differs from the sponge, which retains the ether in a fluid state much longer. Should the bandage become soiled a new one can be inserted in a few minutes.

3d. By leaving the instrument open at top, the supply can be kept up constantly, if desired; and as ether vapor is heavier than air, there is no less by not covering it. The top should never be covered.

Mode of using the Inhaler. 1st. Place a towel beneath the chin of the patient, as ex-



FIG I. INSTRUMENT COMPLETE.



FIG. II.

perience has taught that a towel should always be within reach in administering anaesthetics.

2d. Place the instrument over the face, covering the nose and chin, and let the patient breathe through it before any ether is applied. This will convince him that he is not to be deprived of air.

3d. Begin with, literally, a few drops of ether; this will not irritate the larynx. Add, in a few seconds, a few drops more, and as soon as the patient is tolerant of the vapor, increase it gradually to its fullest effect. When the effect of the anaesthetic is apparent, a single layer of a coarse towel may be laid over the nose and mouth, and the instrument replaced; this is a wise precaution against vomiting or spitting.

4th. When the patient is fully influenced it is well to add a few drops at short intervals, and thus keep up a gradual anaesthetic effect.

The advantages of the Inhaler.—1st. It presents a large surface for the liberation of ether vapor. the air coming to both sides of each layer, sets the ether vapor free more rapidly than is possible in the use of a towel or sponge.

2d. It is open at the top, and the ether can be added constantly, if desired, and in small quantities, without removing from the face. The sponge and towel both require removal, and the ether is usually poured on them in quantities.

3d. The ether vapor falls by its weight, as it is heavier than the air; and as the instrument fits the face the patient gets the full advantage of it.

4th. It does not cover the patient's eyes—does not terrify him, and he often passes under its influence without a struggle.

5th. By its proper use the laryngeal irritation may be wholly avoided, the anaesthetic effect as easily gained as is possible with the use of ether, at the same time there is a great economy of the latter and great comfort to the patient.

(We have seen a modification of this apparatus, the hood being of soft rubber and the laced bandage much tighter, but it appears to us that Snowden's apparatus is by far the safest.)

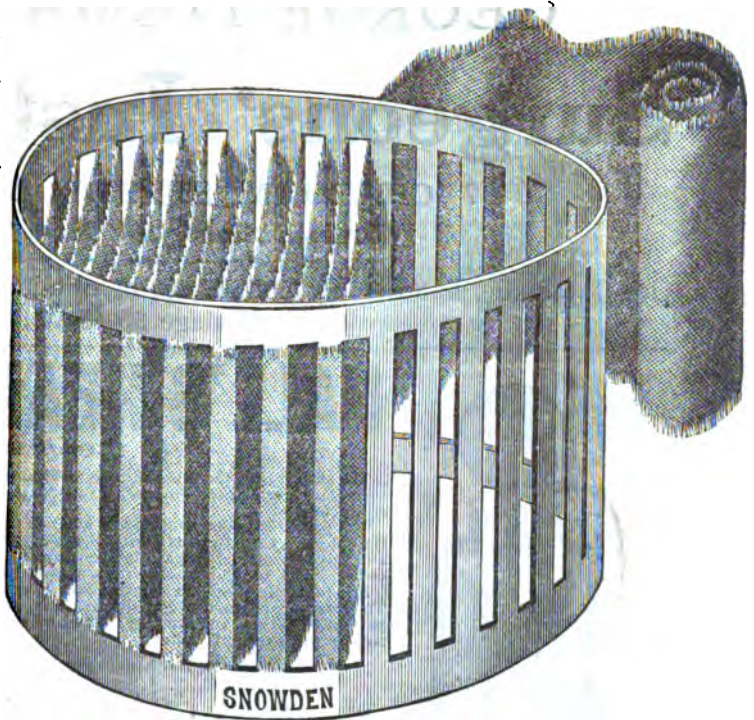


FIG. III.

The partitions are made of thin bandage, and



FIG. IV.

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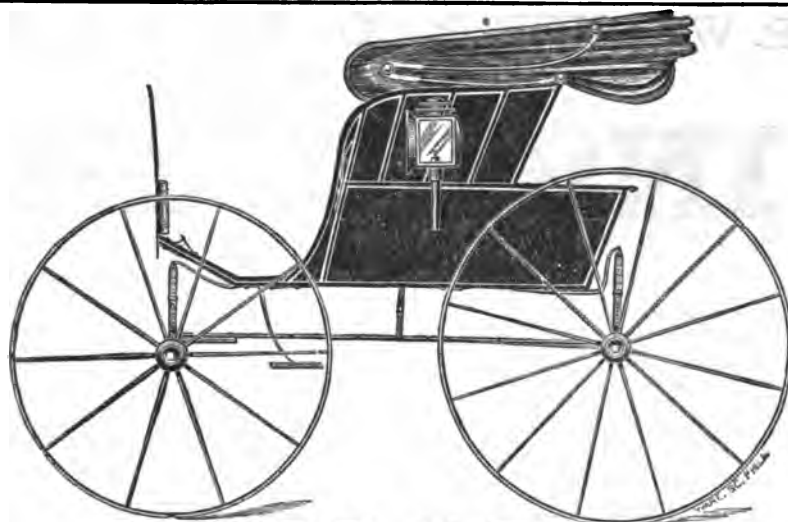
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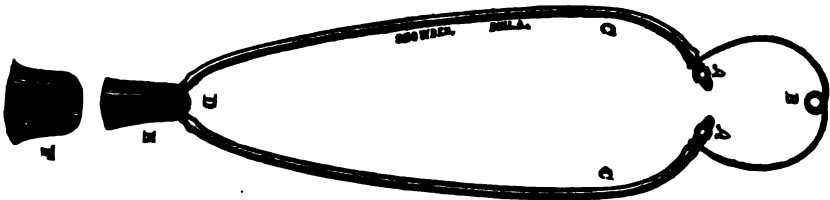
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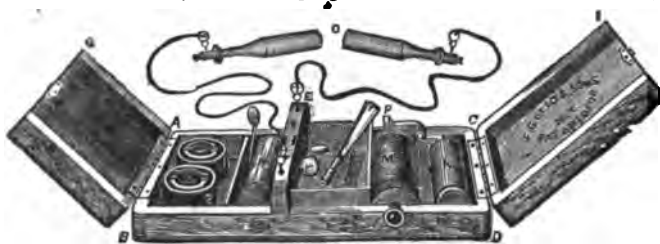
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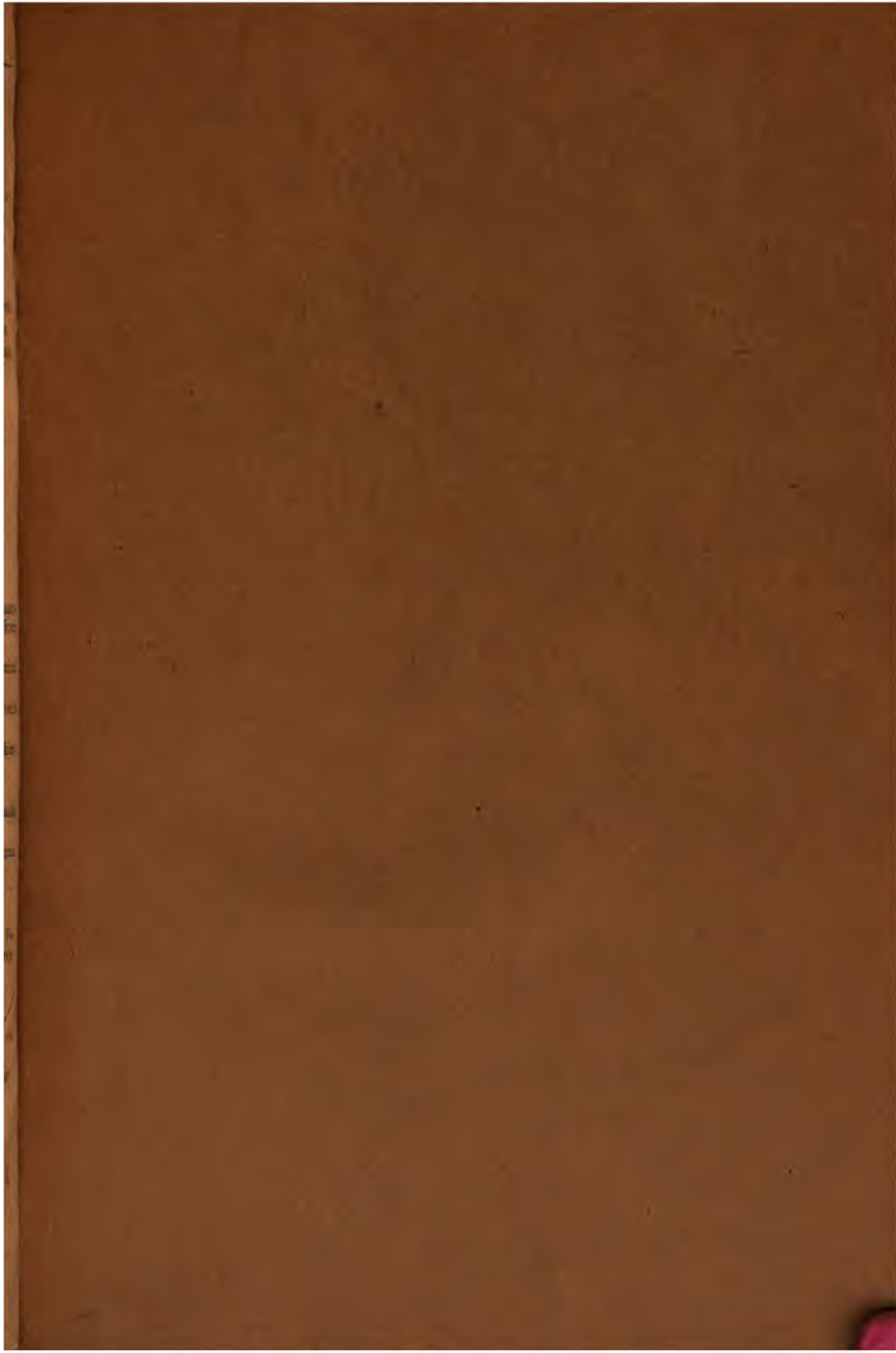
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